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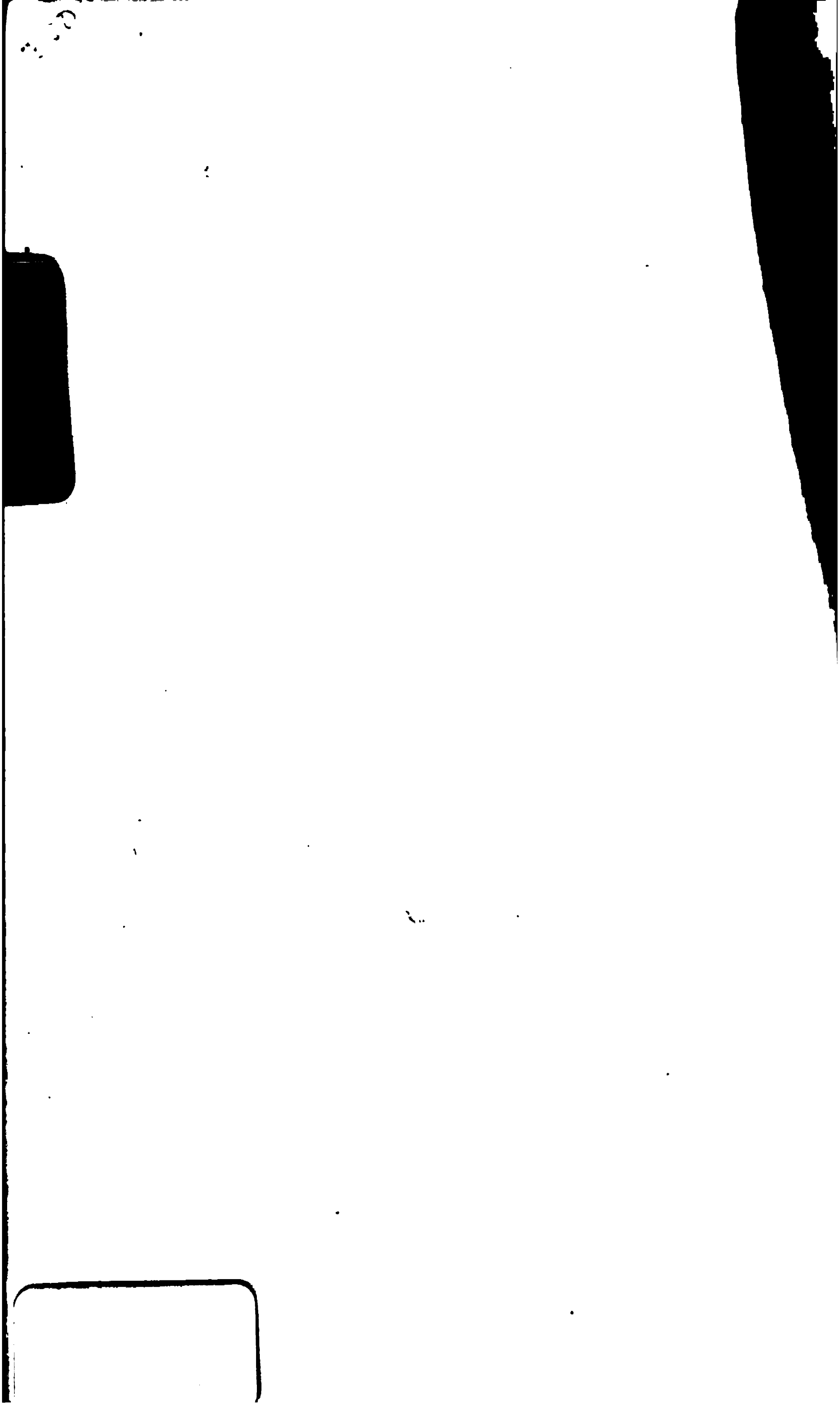
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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES

TO THE

TWO HOUSES OF CONGRESS

AT THE COMMENCEMENT OF THE

SECOND SESSION OF THE FORTY-SIXTH CONGRESS,

WITH THE

REPORTS OF THE HEADS OF DEPARTMENTS

AND

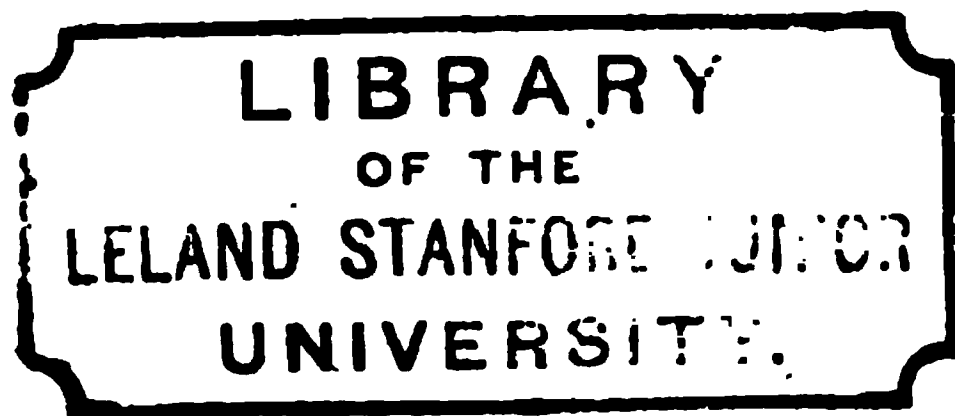
SELECTIONS FROM ACCOMPANYING DOCUMENTS.

EDITED BY

BEN: PERLEY P OORE.

WASHINGTON
GOVERNMENT PRINTING
1879.

NO. 10
OFFICE.



17.8079

Prepared in accordance with the provisions of the Revised Statutes, approved June 23, 1874.

SEC. 75. The Joint Committee on Public Printing shall appoint a competent person, who shall edit such portion of the documents accompanying the annual reports of the Departments as they may deem suitable for popular distribution, and prepare an alphabetical index thereto.

* * * * *

SEC. 196. The head of each Department, except the Department of Justice, shall furnish to the Congressional Printer copies of the documents usually accompanying his annual report on or before the first day of November in each year, and a copy of his annual report on or before the third Monday of November in each year.

* * * * *

SEC. 3798. Of the documents named in this section there shall be printed and bound, in addition to the usual number for Congress, the following numbers of copies, namely:

* * * * *

Second. Of the President's message, the annual reports of the Executive Departments, and the abridgment of accompanying documents, unless otherwise ordered by either house, ten thousand copies for the use of the members of the Senate and twenty-five thousand copies for the use of the members of the House of Representatives.

MESSAGE

OF

THE PRESIDENT OF THE UNITED STATES.

Fellow-Citizens of the Senate and House of Representatives :

The members of the Forty-sixth Congress have assembled in their first regular session under circumstances calling for mutual congratulation and grateful acknowledgment to the Giver of all good for the large and unusual measure of national prosperity which we now enjoy.

The most interesting events which have occurred in our public affairs since my last annual message to Congress are connected with the financial operations of the government directly affecting the business interests of the country. I congratulate Congress on the successful execution of the resumption act. At the time fixed, and in the manner contemplated by law, United States notes began to be redeemed in coin. Since the 1st of January last they have been promptly redeemed on presentation, and in all business transactions, public and private, in all parts of the country, they are received and paid out as the equivalent of coin. The demand upon the Treasury for gold and silver in exchange for United States notes has been comparatively small, and the voluntary deposit of coin and bullion in exchange for notes has been very large. The excess of the precious metals deposited or exchanged for United States notes over the amount of United States notes redeemed is about \$40,000,000.

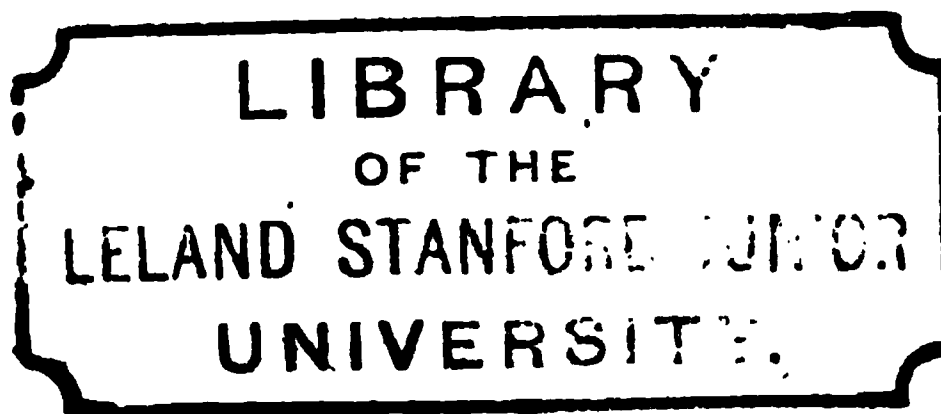
The resumption of specie payments has been followed by a very great revival of business. With a currency equivalent in value to the money of the commercial world, we are enabled to enter upon an equal competition with other nations in trade and production. The increasing foreign demand for our manufactures and agricultural products has caused a large balance of trade in our favor, which has been paid in gold, from the 1st of July last to November 15, to the amount of about \$59,000,000. Since the resumption of specie payments there has also been a marked and gratifying improvement of the public credit. The bonds of the government bearing only 4 per cent. interest have been sold at or above par, sufficient in amount to pay off all of the national debt which was redeemable under present laws. The amount of interest saved annually by the process of refunding the debt, since March 1, 1877, is \$14,297,177. The bonds sold were largely in small sums, and the number of our citizens now holding the public securities is much greater than ever before. The amount of the national debt which matures within less than two years is \$792,121,700, of which \$500,000,000 bear interest at the rate of 5 per cent., and the balance is in bonds bear-

ing 6 per cent. interest. It is believed that this part of the public debt can be refunded by the issue of 4 per cent. bonds, and, by the reduction of interest which will thus be effected, about eleven millions of dollars can be annually saved to the Treasury. To secure this important reduction of interest to be paid by the United States, further legislation is required, which, it is hoped, will be provided by Congress during its present session.

The coinage of gold by the mints of the United States during the last fiscal year was \$40,986,912. The coinage of silver dollars, since the passage of the act for that purpose, up to November 1, 1879, was \$45,000,850, of which \$12,700,344 have been issued from the Treasury and are now in circulation, and \$32,300,506 are still in the possession of the government.

The pendency of the proposition for unity of action between the United States and the principal commercial nations of Europe, to effect a permanent system for the equality of gold and silver in the recognized money of the world, leads me to recommend that Congress refrain from new legislation on the general subject. The great revival of trade, internal and foreign, will supply during the coming year its own instructions, which may well be awaited before attempting further experimental measures with the coinage. I would, however, strongly urge upon Congress the importance of authorizing the Secretary of the Treasury to suspend the coinage of silver dollars upon the present legal ratio. The market value of the silver dollar being uniformly and largely less than the market value of the gold dollar, it is obviously impracticable to maintain them at par with each other if both are coined without limit. If the cheaper coin is forced into circulation it will, if coined without limit, soon become the sole standard of value, and thus defeat the desired object, which is a currency of both gold and silver, which shall be of equivalent value, dollar for dollar, with the universally recognized money of the world.

The retirement from circulation of United States notes, with the capacity of legal-tender in private contracts, is a step to be taken in our progress towards a safe and stable currency, which should be accepted as the policy and duty of the government, and the interest and security of the people. It is my firm conviction that the issue of legal-tender paper money based wholly upon the authority and credit of the government, except in extreme emergency, is without warrant in the Constitution, and a violation of sound financial principles. The issue of United States notes during the late civil war with the capacity of legal-tender between private individuals was not authorized except as a means of rescuing the country from imminent peril. The circulation of these notes as paper money, for any protracted period of time after the accomplishment of this purpose, was not contemplated by the framers of the law under which they were issued. They anticipated the redemption and withdrawal of these notes at the earliest practicable period



A. 8079

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towards a more general and complete establishment, at whatever cost, of universal security and freedom in the exercise of the elective franchise. While many topics of political concern demand great attention from our people, both in the sphere of national and State authority, I find no reason to qualify the opinion I expressed in my last annual message, that no temporary or administrative interests of government, however urgent or weighty, will ever displace the zeal of our people in defense of the primary rights of citizenship, and that the power of public opinion will override all political prejudices, and all sectional and State attachments, in demanding that all over our wide territory the name and character of citizen of the United States shall mean one and the same thing, and carry with them unchallenged security and respect. I earnestly appeal to the intelligence and patriotism of all good citizens of every part of the country, however much they may be divided in opinions on other political subjects, to unite in compelling obedience to existing laws aimed at the protection of the right of suffrage. I respectfully urge upon Congress to supply any defects in these laws which experience has shown and which it is within its power to remedy. I again invoke the co-operation of the executive and legislative authorities of the States in this great purpose. I am fully convinced that if the public mind can be set at rest on this paramount question of popular rights no serious obstacle will thwart or delay the complete pacification of the country or retard the general diffusion of prosperity.

In a former message I invited the attention of Congress to the subject of the reformation of the civil service of the government, and expressed the intention of transmitting to Congress as early as practicable a report upon this subject by the chairman of the civil-service commission.

In view of the facts that, during a considerable period, the Government of Great Britain has been dealing with administrative problems and abuses in various particulars analogous to those presented in this country, and that in recent years the measures adopted were understood to have been effective and in every respect highly satisfactory, I thought it desirable to have fuller information upon the subject, and accordingly requested the chairman of the civil-service commission to make a thorough investigation for this purpose. The result has been an elaborate and comprehensive report.

The report sets forth the history of the partisan-spoils system in Great Britain, and of the rise and fall of the parliamentary patronage, and of official interference with the freedom of elections. It shows that after long trials of various kinds of examinations those which are competitive and open on equal terms to all, and which are carried on under the superintendence of a single commission, have, with great advantage, been established as conditions of admission to almost every official place in the subordinate administration of that country and of British India. The completion of the report, owing to the extent of the labor involved in its preparation and the omission of Congress to make any provision either

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for the compensation or the expenses of the commission, has been postponed until the present time. It is herewith transmitted to Congress.

While the reform measures of another government are of no authority for us, they are entitled to influence to the extent to which their intrinsic wisdom and their adaptation to our institutions and social life may commend them to our consideration. The views I have heretofore expressed concerning the defects and abuses in our civil administration remain unchanged, except in so far as an enlarged experience has deepened my sense of the duty both of officers and of the people themselves to co-operate for their removal. The grave evils and perils of a partisan spoils system of appointment to office and of office tenure are now generally recognized. In the resolutions of the great parties, in the reports of departments, in the debates and proceedings of Congress, in the messages of executives, the gravity of these evils has been pointed out and the need of their reform has been admitted.

To command the necessary support, every measure of reform must be based on common right and justice, and must be compatible with the healthy existence of great parties, which are inevitable and essential in a free State.

When the people have approved a policy at a national election, confidence on the part of the officers they have selected and of the advisers who, in accordance with our political institutions, should be consulted in the policy which it is their duty to carry into effect, is indispensable. It is eminently proper that they should explain it before the people, as well as illustrate its spirit in the performance of their official duties.

Very different considerations apply to the greater number of those who fill the subordinate places in the civil service. Their responsibility is to their superiors in official position. It is their duty to obey the legal instructions of those upon whom that authority is devolved, and their best public service consists in the discharge of their functions, irrespective of partisan politics. Their duties are the same, whatever party is in power and whatever policy prevails. As a consequence, it follows that their tenure of office should not depend on the prevalence of any policy or the supremacy of any party, but should be determined by their capacity to serve the people most usefully quite irrespective of partisan interests. The same considerations that should govern the tenure should also prevail in the appointment, discipline, and removal of these subordinates. The authority of appointment and removal is not a perquisite, which may be used to aid a friend or reward a partisan, but is a trust, to be exercised in the public interest under all the sanctions which attend the obligation to apply the public funds only for public purposes.

Every citizen has an equal right to the honor and profit of entering the public service of his country. The only just ground of discrimination is the measure of character and capacity he has to make that service most useful to the people. Except in cases where, upon just and recognized

principles—as upon the theory of pensions—offices and promotions are bestowed as rewards for past services, their bestowal upon any theory which disregards personal merit, is an act of injustice to the citizen, as well as a breach of that trust subject to which the appointing power is held.

In the light of these principles, it becomes of great importance to provide just and adequate means, especially for every department and large administrative office, where personal discrimination on the part of its head is not practicable, for ascertaining those qualifications to which appointments and removals should have reference. To fail to provide such means is not only to deny the opportunity of ascertaining the facts upon which the most righteous claim to office depends, but, of necessity to discourage all worthy aspirants by handing over appointments and removals to mere influence and favoritism. If it is the right of the worthiest claimant to gain the appointment, and the interest of the people to bestow it upon him, it would seem clear that a wise and just method of ascertaining personal fitness for office must be an important and permanent function of every just and wise government. It has long since become impossible, in the great offices, for those having the duty of nomination and appointment, to personally examine into the individual qualifications of more than a small proportion of those seeking office and, with the enlargement of the civil service, that proportion must continue to become less.

In the earlier years of the government, the subordinate offices were so few in number that it was quite easy for those making appointments and promotions to personally ascertain the merits of candidates. Party managers and methods had not then become powerful agencies of coercion, hostile to the free and just exercise of the appointing power.

A large and responsible part of the duty of restoring the civil service to the desired purity and efficiency rests upon the President, and it is my purpose to do what is within my power to advance such prudent and gradual measures of reform as will most surely and rapidly bring about that radical change of system essential to make our administrative methods satisfactory to a free and intelligent people. By a proper exercise of authority, it is in the power of the Executive to do much to promote such a reform. But it cannot be too clearly understood that nothing adequate can be accomplished without co-operation on the part of Congress and considerate and intelligent support among the people. Reforms which challenge the generally accepted theories of parties, and demand changes in the methods of departments, are not the work of a day. Their permanent foundations must be laid in sound principles and in an experience which demonstrates their wisdom and exposes the errors of their adversaries. Every worthy officer desires to make his official action a gain and an honor to his country, but the people themselves, far more than their officers in public station, are interested in a pure, economical, and vigorous administration.

ANNUAL MESSAGE OF THE PRESIDENT.

By laws enacted in 1853 and 1855, and now in substance incorporated in the Revised Statutes, the practice of arbitrary appointments in several subordinate grades in the great departments was corrected, and examinations as to capacity, to be conducted by departmental examiners, were provided for and made conditions of admission to the public service. These statutes are a decision by Congress that examinations of some sort as to attainments and capacity are essential to the well-being of the public service. The important question in the enactment of these laws have been as to the character of the examinations, and whether official favor and partisan influence, right and merit, were to control the access to the examination. If, in fact, these examinations have not always been open to workmen generally, who might wish to be examined. Official favoritism and partisan influence, as a rule, appear to have designated those who were permitted to go before the examining boards, subjecting the examiners to a pressure from the friends of the candidates which they were to resist. As a consequence, the standard of admission fell far below which the public interest demanded. It was also almost entirely a system which provided for various separate boards of examination, with no common supervision or uniform method of procedure, and was in confusion, inconsistency, and inadequate tests of capacity, which was detrimental to the public interests. A further and more radical reform was obviously required.

In the annual message of December, 1870, my predecessor declared that "there is no duty which so much embarrasses the heads of departments as that of appointments; nor is the labor so arduous and thankless imposed on Senators and Representatives as that of finding places for constituents. The present system does not secure the best men, and often not even fit men for the public service. The elevation and purification of the civil service of the government has been hailed with approval by the whole people of the United States. Congress, accordingly, passed the act approved March 3, 1871, to reorganize the civil service of the United States and promote the efficiency of the government, giving the necessary authority to the Executive to inaugurate a service reform.

Acting under this statute, which was interpreted as intended to create a system of just and effectual examinations under uniform conditions, a number of eminently competent persons were selected who entered with zeal upon the discharge of their duties, with an intelligent appreciation of the requirements of the service, and took charge of the examination. Their capacity as a board, have been known as the "Civil Service Commission." Congress for two years appropriated the money for the compensation and for the expense of carrying on the commission."

It appears from the report of the commission, submitted

dent in April, 1874, that examinations had been held in various sections of the country, and that an appropriation of about \$25,000 would be required to meet the annual expenses, including salaries, involved in discharging the duties of the commission. The report was transmitted to Congress by special message of April 18, 1874, with the following favorable comment upon the labors of the commission: "If sustained by Congress, I have no doubt the rules can, after the experience gained, be so improved and enforced as to still more materially benefit the public service and relieve the Executive, members of Congress, and the heads of departments from influences prejudicial to good administration. The rules, as they have hitherto been enforced, have resulted beneficially, as is shown by the opinions of the members of the Cabinet and their subordinates in the departments, and in that opinion I concur." And in the annual message of December of the same year similar views are expressed, and an appropriation for continuing the work of the commission again advised.

The appropriation was not made, and, as a consequence, the active work of the commission was suspended, leaving the commission itself still in existence. Without the means, therefore, of causing qualifications to be tested in any systematic manner, or of securing for the public service the advantages of competition upon any extensive plan, I recommended in my annual message of December, 1877, the making of an appropriation for the resumption of the work of the commission.

In the mean time, however, competitive examinations under many embarrassments have been conducted within limited spheres in the Executive Departments in Washington and in a number of the custom-houses and post-offices of the principal cities of the country, with a view to further test their effects, and in every instance they have been found to be as salutary as they are stated to have been under the administration of my predecessor. I think the economy, purity, and efficiency of the public service would be greatly promoted by their systematic introduction, wherever practicable, throughout the entire civil service of the government, together with ample provision for their general supervision, in order to secure consistency and uniform justice.

Reports from the Secretary of the Interior, from the Postmaster-General, from the postmaster in the city of New York, where such examinations have been some time on trial, and also from the collector of the port, the naval officer, and the surveyor in that city, and from the postmasters and collectors in several of the other large cities, show that the competitive system, where applied, has in various ways contributed to improve the public service.

The reports show that the results have been salutary in a marked degree, and that the general application of similar rules cannot fail to be of decided benefit to the service.

The reports of the government officers, in the city of New York especially, bear decided testimony to the utility of open competitive exam-

ANNUAL MESSAGE OF THE PRESIDENT.

mations in their respective offices, showing that "these examinations, and the excellent qualifications of those admitted to the service through them, have had a marked incidental effect upon the persons previously in the service, and particularly upon those aspiring to promotion. There has been, on the part of these latter, an increased interest in the work, and a desire to extend acquaintance with it beyond the particular desk occupied, and thus the morale of the entire force has been raised. . . . The examinations have been attended by many citizens, who have had an opportunity to thoroughly investigate the scope and character of the tests and the method of determining the results, and those visitors have, without exception, approved the methods employed, and several of them have publicly attested their favorable opinion."

Upon such considerations, I deem it my duty to renew the recommendation contained in my annual message of December, 1877, requesting Congress to make the necessary appropriation for the resumption of the work of the Civil-Service Commission. Economy will be promoted by authorizing a moderate compensation to persons in the public service who may perform extra labor upon or under the commission, as the Executive may direct.

I am convinced that if a just and adequate test of merit is enforced for admission to the public service and in making promotions, such abuses as removals without good cause and partisan and official interference with the proper exercise of the appointing power will in large measure disappear.

There are other administrative abuses to which the attention of Congress should be asked in this connection. Mere partisan appointments and the constant peril of removal without cause very naturally lead to an absorbing and mischievous political activity on the part of those thus appointed, which not only interferes with the due discharge of official duty, but is incompatible with the freedom of elections. Not without warrant, in the views of several of my predecessors in the Presidential office, and directly within the law of 1871, already cited, I endeavored, by regulation, made on the 22d day of June, 1877, to put some reasonable limits to such abuses. It may not be easy, and it may never perhaps be necessary, to define with precision the proper limit of political action on the part of Federal officers.

But while their right to hold and freely express their opinions cannot be questioned, it is very plain that they should neither be allowed to devote to other subjects the time needed for the proper discharge of their official duties, nor to use the authority of their office to enforce their own opinions or to coerce the political action of those who hold different opinions.

Reasons of justice and public policy, quite analogous to those which forbid the use of official power for the oppression of the private citizen, impose upon the government the duty of protecting its officers and agents from arbitrary exactions. In whatever aspect considered, the practice of making levies, for party purposes, upon the salaries of officers

is highly demoralizing to the public service and discreditable to the country. Though an officer should be as free as any other citizen to give his own money in aid of his opinions or his party, he should also be as free as any other citizen to refuse to make such gifts. If salaries are but a fair compensation for the time and labor of the officer, it is gross injustice to levy a tax upon them. If they are made excessive, in order that they may bear the tax, the excess is an indirect robbery of the public funds.

I recommend, therefore, such a revision and extension of present statutes as shall secure to those in every grade of official life or public employment the protection with which a great and enlightened nation should guard those who are faithful in its service.

Our relations with foreign countries have continued peaceful.

With Great Britain there are still unsettled questions, growing out of the local laws of the maritime provinces and the action of provincial authorities deemed to be in derogation of rights secured by treaty to American fishermen. The United States minister in London has been instructed to present a demand for \$105,305.02 in view of the damages received by American citizens at Fortune Bay, on the 6th day of January, 1878. The subject has been taken into consideration by the British Government, and an early reply is anticipated.

Upon the completion of the necessary preliminary examinations, the subject of our participation in the provincial fisheries, as regulated by treaty, will at once be brought to the attention of the British Government, with a view to an early and permanent settlement of the whole question, which was only temporarily adjusted by the treaty of Washington.

Efforts have been made to obtain the removal of restrictions found injurious to the exportation of cattle to the United Kingdom.

Some correspondence has also occurred with regard to the rescue and saving of life and property upon the lakes, which has resulted in important modifications of the previous regulations of the Dominion Government on the subject in the interest of humanity and commerce.

In accordance with the joint resolution of the last session of Congress commissioners were appointed to represent the United States at the two International Exhibitions in Australia, one of which is now in progress at Sydney, and the other to be held next year at Melbourne. A desire has been expressed by our merchants and manufacturers interested in the important and growing trade with Australia, that an increased provision should be made by Congress for the representation of our industries at the Melbourne Exhibition of next year, and the subject is respectfully submitted to your favorable consideration.

The assent of the government has been given to the landing, on the coast of Massachusetts, of a new and independent transatlantic cable between France, by way of the French island of St. Pierre and this country, subject to any future legislation of Congress on the subject.

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The conditions imposed, before allowing this connection to be established, are such as to secure its competitive rates of marine cable, and preclude amalgamation for future equality of rights to our government and France in the use of the cable, and prevent the loss of the privilege as accorded by France to any future cable communication between France and which may be projected and accomplished by a further reduction of the present rates of cable Europe. felt to be too burdensome to the interests which necessarily flow from the establishment of the

The attention of Congress was drawn to the subject of regulation by Congress of the whole subject by my predecessor in his message of December 1878, and I have fully submitted to your consideration the important action in this matter.

The questions of grave importance with Spain, arising from the incidents of the Cuban insurrection, have been, I trust, fully and honorably settled. It may reasonably be expected that the commission now sitting in Washington for the purpose of settling the claims in this connection will soon be able to bring its labors to a successful conclusion.

The long-standing question of East Florida, claimed by Spain, has been renewed as a subject of correspondence, and may require Congressional action for its final disposition.

A treaty with the Netherlands, with respect to the privileges, similar to those with other powers, has been negotiated, and the ratifications were exchanged on the 10th of March. Negotiations for extradition treaties with the Netherlands and Denmark are now in progress.

Some questions with Switzerland, in regard to the rights of emigrants, have arisen, but it is not doubted that they will be settled upon a just and satisfactory basis. A question has arisen in respect to an asserted claim by Swiss municipal authorities over persons and property of Swiss citizens in this country. It is possible this may require adjustment.

With the German Empire frequent questions have arisen in regard to the subjects of naturalization and expatriation. Our government has constantly manifested a desire to comply with all treaty stipulations in regard to these subjects.

In consequence of the omission of Congress to provide for a diplomatic representative at Athens, the legation at Constantinople has been drawn. There is now no channel of diplomatic communication between the two countries, and the expediency of providing for a diplomatic representative at Constantinople, is submitted to Congress.

Relations with Austria, Russia, Italy, Portugal, and Belgium continue amicable, and marked by no incidents of importance.

A change of the personal head of the Government of Egypt has taken place. No change, however, has occurred in the relations between Egypt and the United States. The action of the Egyptian Government in presenting to the city of New York one of the ancient obelisks, which possess such historic interest, is highly appreciated as a generous mark of international regard. If prosperity should attend the enterprise of its transportation across the Atlantic, its erection in a conspicuous position in the chief commercial city of the nation will soon be accomplished.

The treaty recently made between Japan and the United States in regard to the revision of former commercial treaties, it is now believed will be followed by similar action on the part of other treaty powers. The attention of Congress is again invited to the subject of the indemnity funds received some years since from Japan and China, which, with their accumulated interest, now amount to considerable sums. If any part of these funds is justly due to American citizens they should receive it promptly; and whatever may have been received by this government in excess of strictly just demands, should in some form be returned to the nations to whom it equitably belongs.

The Government of China has signified its willingness to consider the question of the emigration of its subjects to the United States with a dispassionate fairness, and to co-operate in such measures as may tend to prevent injurious consequences to the United States. The negotiations are still proceeding, and will be pressed with diligence.

A question having arisen between China and Japan about the Lev Chew Islands, the United States Government has taken measures to inform those powers of its readiness to extend its good offices for the maintenance of peace, if they shall mutually deem it desirable, and find it practicable to avail themselves of the proffer.

It is a gratification to be able to announce that, through the judicious and energetic action of the military commanders of the two nations on each side of the Rio Grande, under the instructions of their respective governments, raids and depredations have greatly decreased, and, in the localities where formerly most destructive, have now almost wholly ceased. In view of this result, I entertain a confident expectation that the prevalence of quiet on the border will soon become so assured as to justify a modification of the present orders to our military commander as to crossing the border, without encouraging such disturbances as would endanger the peace of the two countries.

The third installment of the award against Mexico under the claim commission of July 4, 1868, was duly paid, and has been put in course of distribution in pursuance of the act of Congress providing for the same. This satisfactory situation between the two countries leads me to anticipate an expansion of our trade with Mexico and an increase of contribution of capital and industry by our people to the development of the great resources of that country. I earnestly commend to the wisdom of Congress the provision of suitable legislation looking to this result.

that American products and manufactures will find new and expanding markets. The reports of diplomatic and consular officers upon this subject, under the system now adopted, have resulted in obtaining much valuable information, which has been and will continue to be laid before Congress and the public from time to time.

The third article of the treaty with Russia of March 30, 1867, by which Alaska was ceded to the United States, provides that the inhabitants of the ceded territory, with the exception of the uncivilized native tribes shall be admitted to the enjoyment of all the rights of citizens of the United States, and shall be maintained and protected in the free enjoyment of their liberty, property, and religion. The uncivilized tribes are subject to such laws and regulations as the United States may from time to time adopt in regard to the aboriginal tribes of that country.

Both the obligations of this treaty and the necessities of the people require that some organized form of government over the Territory of Alaska be adopted.

There appears to be no law for the arrest of persons charged with common-law offenses, such as assault, robbery, and murder, and no magistrate authorized to issue or execute process in such cases. Serious difficulties have already arisen from offenses of this character, not only among the original inhabitants, but among citizens of the United States and other countries, who have engaged in mining, fishing, and other business operations within the Territory. A bill authorizing the appointment of justices of the peace and constables, and the arrest and detention of persons charged with criminal offenses, and providing for an appeal to United States courts for the district of Oregon, in suitable cases, will, at a proper time, be submitted to Congress.

The attention of Congress is called to the annual report of the Secretary of the Treasury on the condition of the public finances.

The ordinary revenues from all sources for the fiscal year ended June 30, 1879, were \$273,827,184.46; the ordinary expenditures for the same period were \$266,947,883.53, leaving a surplus revenue for the year of \$6,879,300.93.

The receipts for the present fiscal year, ending June 30, 1880, actual and estimated, are as follows: Actual receipts for the first quarter, commencing July 1, 1879, \$79,843,663.61; estimated receipts for the remaining three-quarters of the year, \$208,156,336.39; total receipts for the current fiscal year, actual and estimated, \$288,000,000.

The expenditures for the same period will be, actual and estimated, as follows: For the quarter commencing July 1, 1879, actual expenditures \$91,683,385.10; and for the remaining three-quarters of the year the expenditures are estimated at \$172,316,614.90, making the total expenditures \$264,000,000, and leaving an estimated surplus revenue for the year ending June 30, 1880, of \$24,000,000. The total receipts during the next fiscal year, ending June 30, 1881, estimated according to existing laws, will be \$288,000,000, and the estimated ordinary expenditures for the

sent a full and detailed account of the military operations for the suppression of hostilities among the Indians of the Ute and Apache tribes and praise is justly awarded to the officers and troops engaged, for promptness, skill, and courage displayed.

The past year has been one of almost unbroken peace and quiet on the Mexican frontier, and there is reason to believe that the efforts of this government and of Mexico to maintain order in that region will prove permanently successful.

This department was enabled during the past year to find temporary though crowded, accommodations, and a safe depository for a portion of its records, in the completed east wing of the building designed for the State, War, and Navy Departments. The construction of the north wing of the building, a part of the structure intended for the use of the War Department, is being carried forward with all possible dispatch and the work should receive from Congress such liberal appropriation as will secure its speedy completion.

The report of the Secretary of the Navy shows continued improvement in that branch of the service during the last fiscal year. Extensive repairs have been made upon vessels, and two new ships have been completed and made ready for sea.

The total expenditures of the year ended June 30, 1879, including specific appropriations not estimated for by the department, were \$13,555,710.09. The expenses chargeable to the year, after deducting the amount of these specific appropriations, were \$13,343,317.79; but this is subject to a reduction of \$283,725.99, that amount having been drawn upon warrants, but not paid out during the year. The amount of appropriations applicable to the last fiscal year was \$14,538,646.17. There was, therefore, a balance of \$1,479,054.37 remaining unexpended and to the credit of the department, on June 30, 1879. The estimates for the fiscal year ending June 30, 1881, are \$14,864,147.95, which exceed the appropriations for the present fiscal year \$361,897.28. The reason for this increase is explained in the Secretary's report. The appropriations available for the present fiscal year are \$14,502,250.67, which will in the opinion of the Secretary, answer all the ordinary demands of the service. The amount drawn from the Treasury from July 1 to November 1, 1879, was \$5,770,404.12, of which \$1,095,440.33 has been refunded leaving as the expenditure for that period \$4,674,963.79. If the expenditures of the remaining two-thirds of the year do not exceed the proportion for these four months, there will remain unexpended at the end of the year \$477,359.30 of the current appropriations. The report of the Secretary shows the gratifying fact that among all the disbursing officers of the pay corps of the Navy there is not one who is a defaulter to the extent of a single dollar. I unite with him in recommending the removal of the Observatory to a more healthful location. That institution reflects credit upon the nation, and has obtained the approbation of scientific men in all parts of the world. Its removal from its present

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location would not only be conducive to the health of its officers and professors, but would greatly increase its usefulness.

The appropriation for judicial expenses, which has heretofore been made for the Department of Justice, in gross, was subdivided at the last session of Congress, and no appropriation whatever was made for the payment of the fees of marshals and their deputies, either in the service of process or for the discharge of other duties; and, since June 30, these officers have continued the performance of their duties without compensation from the government, taking upon themselves the necessary incidental outlays, as well as rendering their own services. In only a few unavoidable instances has the proper execution of the process of the United States failed by reason of the absence of these officers, priation. This course of official conduct on the part of these officers, highly creditable to their fidelity, was advised by the Attorney-General, who informed them, however, that they would necessarily have to rely for their compensation upon the prospect of future legislation by Congress. I therefore especially recommend that immediate appropriation be made by Congress for this purpose.

The act making the principal appropriation for the Department of Justice at previous sessions has uniformly contained the following clause: "And for defraying the expenses which may be incurred in the enforcement of the act approved February 28, 1871, entitled 'An act to amend an act approved May 30, 1870, entitled 'An act to amend the rights of citizens of the United States to vote in the several States of the Union and for other purposes,' or any acts amendatory thereof or supplementary thereto.'"

No appropriation was made for this purpose for the current year. No general election for members of Congress occurred, the omission a matter of little practical importance. Such an election will, however, take place during the ensuing year, and the appropriation made for the pay of marshals and deputies should be sufficient to embrace compensation for the services they may be required to perform at such election.

The business of the Supreme Court is, at present, largely in arrears. It cannot be expected that more causes can be decided than are now disposed of in its annual session, or that by any assiduity the distinguished magistrates who compose the court can accomplish more than is now done. In the courts of many of the circuits, also, the business has increased to such an extent that the delay of justice will call the attention of Congress to an appropriate remedy. It is believed that all is done in each circuit which can fairly be expected from its judicial force. The evils arising from delay are less heavily felt by the United States than by private suitors, as its causes are advanced by the courts when it is seen that they involve the discussion of questions of a public character.

The remedy suggested by the Attorney-General is the appointment of additional circuit judges and the creation of an intermediate court

of errors and appeals, which shall relieve the Supreme Court of a part of its jurisdiction, while a larger force is also obtained for the performance of circuit duties.

I commend this suggestion to the consideration of Congress. It would seem to afford a complete remedy, and would involve, if ten additional circuit judges are appointed, an expenditure, at the present rate of salaries, of not more than sixty thousand dollars a year, which would certainly be small in comparison with the objects to be attained.

The report of the Postmaster-General bears testimony to the general revival of business throughout the country. The receipts of the Post Office Department for the fiscal year ended June 30, 1879, were \$30,041,982.86, being \$764,465.91 more than the revenues of the preceding year. The amount realized from the sale of postage-stamps, stamp envelopes, and postal cards was \$764,465.91 more than in the preceding year, and \$2,387,559.23 more than in 1877. The expenditures of the department were \$33,449,899.45, of which the sum of \$376,461.63 was paid on liabilities incurred in preceding years.

The expenditures during the year were \$801,209.77 less than in the preceding year. This reduction is to be attributed mainly to the operation of the law passed June 17, 1878, changing the compensation of postmasters from a commission on the value of stamps sold to a commission on stamps canceled.

The amount drawn from the Treasury on appropriations in addition to the revenues of the department was \$3,031,454.96, being \$2,276,197. less than in the preceding year.

The expenditures for the fiscal year ending June 30, 1881, are estimated at \$39,920,900, and the receipts from all sources at \$32,210,000, leaving a deficiency to be appropriated for out of the Treasury \$7,710,900.

The relations of the department with railroad companies have been harmonized, notwithstanding the general reduction by Congress of the compensation by the appropriation for special facilities, and the railway post-office lines have been greatly extended, especially in the Southern States. The interests of the railway mail service and of the public would be greatly promoted and the expenditures could be more readily controlled by the classification of the employés of the railway mail service as recommended by the Postmaster-General; the appropriation for salaries, with respect to which the maximum limit is already fixed by law, to be made in gross.

The Postmaster-General recommends an amendment of the law relating the increase of compensation for increased service and increased speed on star routes, so as to enable him to advertise for proposals for such increased service and speed. He also suggests the advantages accrue to the commerce of the country from the enactment of a general law authorizing contracts with American-built steamers, carrying the American flag, for transporting the mail between ports of the United States.

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States and ports of the West Indies and South America, at a fixed maximum price per mile, the amount to be expended being regulated by annual appropriations, in like manner with the amount paid for the domestic star service.

The arrangement made by the Postmaster-General and the Secretary of the Treasury for the collection of duty upon books received in the mail from foreign countries has proved so satisfactory in its practical operation, that the recommendation is now made that Congress shall extend the provisions of the act of March 3, 1879, under which this arrangement was made, so as to apply to all other dutiable articles received in the mails from foreign countries.

The reports of the Secretary of the Interior and of the Commissioner of Indian Affairs, setting forth the present state of our relations with the Indian tribes on our territory, the measures taken to advance their civilization and prosperity, and the progress already achieved by them will be found of more than ordinary interest. The general conduct of our Indian population has been so satisfactory, that the occurrence of two disturbances, which resulted in bloodshed and destruction of property, is all the more to be lamented.

The history of the outbreak on the White River Ute Reservation, in Western Colorado, has become so familiar by elaborate reports in the public press, that its remarkable incidents need not be stated here in detail. It is expected that the settlement of this difficulty will lead to such arrangements as will prevent further hostile contact between the Indians and the border settlements in Western Colorado.

The other disturbance occurred at the Mescalearo Agency, in New Mexico, where Victoria, at the head of a small band of marauders, after committing many atrocities, being vigorously chased by a military force, made his way across the Mexican border and is now on foreign soil.

While these occurrences, in which a comparatively small number of Indians were engaged, are most deplorable, a vast majority of our Indian population have fully justified the expectations of those who believe that by humane and peaceful influences the Indian can be led to abandon the habits of savage life and to develop a capacity for useful and civilized occupations. What they have already accomplished in the pursuit of agricultural and mechanical work, the remarkable success which has attended the experiment of employing as freighters a class of Indians hitherto counted among the wildest and most intractable, and the general and urgent desire expressed by them for the education of their children, may be taken as sufficient proof that they will be found capable of accomplishing much more if they continue to be wisely and fairly guided. The "Indian policy" sketched in the report of the Secretary of the Interior, the object of which is to make liberal provision for the education of Indian youth, to settle the Indians upon farm-lots in severalty, to give them title in fee to their farms, inalienable for a certain number of years, and when their wants are thus provided for to

dispose by sale of the lands on their reservations not occupied and use by them, a fund to be formed out of the proceeds for the benefit of the Indians, which will gradually relieve the government of the expense now provided for by annual appropriations, must commend itself as just and beneficial to the Indians, and as also calculated to remove those obstructions which the existence of large reservations presents to the settlement and development of the country. I therefore earnestly recommend the enactment of a law enabling the government to give Indians a title in fee, inalienable for twenty-five years, to the farm-land assigned to them by allotment. I also repeat the recommendation made in my first annual message, that a law be passed admitting Indian who can give satisfactory proof of having by their own labor supported their families for a number of years, and who are willing to detach themselves from their tribal relations, to the benefit of the homestead act, and to grant them patents containing the same provision of inalienability for a certain period.

The experiment of sending a number of Indian children of both sexes to the Hampton Normal and Agricultural Institute, in Virginia, to receive an elementary English education and practical instruction in farming and other useful industries, has led to results so promising, that it was thought expedient to turn over the cavalry barracks at Carlisle, in Pennsylvania, to the Interior Department for the establishment of a Indian school on a larger scale. This school has now one hundred and fifty-eight pupils, selected from various tribes, and is in full operation. Arrangements are also made for the education of a number of Indian boys and girls belonging to tribes on the Pacific slope in a similar manner, at Forest Grove, in Oregon. These institutions will commend themselves to the liberality of Congress and to the philanthropic munificence of the American people.

Last spring information was received of the organization of an extensive movement in the Western States, the object of which was the occupation by unauthorized persons of certain lands in the Indian Territory ceded by the Cherokees to the government for the purpose of settlement by other Indian tribes.

On the 29th of April I issued a proclamation, warning all persons against participation in such an attempt; and, by the co-operation of military force, the invasion was promptly checked. It is my purpose to protect the rights of the Indian inhabitants of that Territory to the fullest extent of the executive power. But it would be unwise to ignore the fact that a territory so large and so fertile, with a population so sparse and with so great a wealth of unused resources, will be found more exposed to the repetition of such attempts as happened this year when the surrounding States are more densely settled and the westward movement of our population looks still more eagerly for fresh lands to occupy. Under such circumstances, the difficulty of maintaining the Indian Territory in its present state will greatly increase, and the

Indian tribes inhabiting it would do well to prepare for such a contingency. I therefore fully approve of the advice given to them by the Secretary of the Interior on a recent occasion, to divide among themselves in severalty as large a quantity of their lands as they can cultivate; to acquire individual title in fee instead of their present tribal ownership in common, and to consider in what manner the balance of their lands may be disposed of by the government for their benefit. By adopting such a policy they would more certainly secure for themselves the value of their possessions, and at the same time promote their progress in civilization and prosperity, than by endeavoring to perpetuate the present state of things in the Territory.

The question whether a change in the control of the Indian service should be made was in the Forty-fifth Congress referred to a joint committee of both Houses for inquiry and report. In my last annual message I expressed the hope that the decision of that question, then in prospect, "would arrest further agitation of this subject, such agitation being apt to produce a disturbing effect upon the service as well as the Indians themselves." Since then, the committee having reported, the question has been decided in the negative by a vote in the House of Representatives.

For the reasons here stated, and in view of the fact that further uncertainty on this point will be calculated to obstruct other much-needed legislation, to weaken the discipline of the service, and to unsettle salutary measures now in progress for the government and improvement of the Indians, I respectfully recommend that the decision arrived at by Congress at its last session be permitted to stand.

The efforts made by the Department of the Interior to arrest the depredations on the timber-lands of the United States have been continued, and have met with considerable success. A large number of cases of trespass have been prosecuted in the courts of the United States; others have been settled, the trespassers offering to make payment to the government for the value of the timber taken by them. The proceeds of these prosecutions and settlements turned into the Treasury far exceed in amount the sums appropriated by Congress for this purpose. A more important result, however, consists in the fact that the destruction of our public forests by depredation, although such cases still occur, has been greatly reduced in extent, and it is probable that if the present policy is vigorously pursued, and sufficient provision to that end is made by Congress, such trespasses, at least those on a large scale, can be entirely suppressed, except in the Territories, where timber for the daily requirements of the population cannot, under the present state of the law, be otherwise obtained. I therefore earnestly invite the attention of Congress to the recommendation made by the Secretary of the Interior, that a law be enacted enabling the government to sell timber from the public lands without conveying the fee, where such lands are principally valuable for the timber thereon, such

sales to be so regulated as to conform to domestic wants and business requirements, while at the same time guarding against a sweeping destruction of the forests. The enactment of such a law appears to become a more pressing necessity every day.

My recommendations in former messages are renewed in favor of enlarging the facilities of the Department of Agriculture. Agriculture is the leading interest and the permanent industry of our people. It is the abundance of agricultural production, as compared with our home consumption, and the largely increased and highly profitable markets abroad which we have enjoyed in recent years, that we are mainly indebted for our present prosperity as a people. We must look for its continued maintenance to the same substantial resource. There is no branch of industry in which labor, directed by scientific knowledge, yields such increased production in comparison with unskilled labor, and no branch of the public service to which the encouragement of liberal appropriations can be more appropriately extended. The omission to render such aid is not a wise economy; but, on the contrary, undoubtedly results in losses of immense sums annually that might be saved through well-directed efforts by the government to promote this vital interest.

The results already accomplished with the very limited means heretofore placed at the command of the Department of Agriculture is a earnest of what may be expected with increased appropriations for the several purposes indicated in the report of the Commissioner, with view to placing the department upon a footing which will enable it to prosecute more effectively the objects for which it is established.

Appropriations are needed for a more complete laboratory, for the establishment of a veterinary division, and a division of forestry, and for an increase of force.

The requirements for these and other purposes, indicated in the report of the Commissioner under the head of the immediate necessities of the department, will not involve any expenditure of money that the country cannot with propriety now undertake in the interests of agriculture.

• It is gratifying to learn from the Bureau of Education the extent to which educational privileges throughout the United States have been advanced during the year. No more fundamental responsibility rests upon Congress than that of devising appropriate measures of financial aid to education, supplemental to local action in the States and Territories and in the District of Columbia. The wise forethought of the founders of our government has not only furnished the basis for the support of the common-school systems of the newer States, but laid the foundations for the maintenance of their universities and colleges of agriculture and the mechanic arts. Measures in accordance with this traditional policy for the further benefit of all these interests and the extension of the same advantages to every portion of the country it is hoped will receive your favorable consideration.

To preserve and perpetuate the national literature should be among

ANNUAL MESSAGE OF THE PRESIDENT.

the foremost cares of the National Legislature. The library gathered at the Capitol still remains unprovided with any suitable accommodations for its rapidly increasing stores. The magnitude and importance of the collection, increased as it is by the deposits made under the law of copyright, by domestic and foreign exchanges, and by the scientific library of the Smithsonian Institution, call for building accommodations which shall be at once adequate and fire-proof. The location of such a public building, which should provide for the pressing necessities of the present, and for the vast increase of the nation's books in the future, is a matter which addresses itself to the discretion of Congress. It is earnestly recommended as a measure which should unite all suffrage and which should no longer be delayed.

The joint commission created by the act of Congress of August 1876, for the purpose of supervising and directing the completion of the Washington National Monument, of which commission the President a member, has given careful attention to this subject, and already the strengthening of the foundation has so far progressed as to insure the entire success of this part of the work. A massive layer of masonry has been introduced below the original foundation, widening the base, increasing the stability of the structure, and rendering it possible to carry the shaft to completion. It is earnestly recommended that such further appropriations be made for the continued prosecution of the work as may be necessary for the completion of this national monument at an early day.

In former messages, impressed with the importance of the subject, I have taken occasion to commend to Congress the adoption of a general policy towards the District of Columbia. The report of the Commissioners of the District, herewith transmitted, contains suggestions and recommendations, to all of which I earnestly invite your careful attention. I ask your early and favorable consideration of the views which they express as to the urgent need of legislation for the reclamation of the marshes of the Potomac and its Eastern Branch, within the limits of the city, and for the repair of the streets of the capital, heretofore laid with wooden blocks, and now by decay rendered almost impassable, and a source of imminent danger to the health of its citizens. The means at the disposal of the Commissioners are wholly inadequate for the accomplishment of these important works, and should be supplemented by timely appropriations from the Federal Treasury.

The filling of the flats in front of the city will add to the adjacent lands and parks now owned by the United States a large and valuable domain, sufficient, it is thought, to reimburse its entire cost, and will also, as an incidental result, secure the permanent improvement of the river for the purposes of navigation.

The Constitution having invested Congress with supreme and exclusive jurisdiction over the District of Columbia, its citizens must of necessity look to Congress alone for all needful legislation affecting their

interests; and as the territory of this District is the common property of the people of the United States, who, equally with its resident citizens, are interested in the prosperity of their capital, I cannot doubt that you will be amply sustained by the general voice of the country in any measures you may adopt for this purpose.

I also invite the favorable consideration of Congress to the wants of the public schools of this District, as exhibited in the report of the Commissioners. While the number of pupils is rapidly increasing, no adequate provision exists for a corresponding increase of school accommodation, and the Commissioners are without the means to meet this urgent need. A number of the buildings now used for school purposes are rented, and are, in important particulars, unsuited for the purpose. The cause of popular education in the District of Columbia is surely entitled to the same consideration at the hands of the National Government as in the several States and Territories, to which munificent grants of the public lands have been made for the endowment of schools and universities.

RUTHERFORD B. HAYES.

EXECUTIVE MANSION,
December 1, 1879.

REPORT OF THE SECRETARY OF THE TREASURY

TREASURY DEPARTMENT
Washington, D. C., December

SIR: I have the honor to submit the following annual re
The ordinary revenues, from all sources, for the fiscal

June 30, 1879, were—

From customs.....	\$12
From internal revenue.....	1
From sales of public lands.....	
From tax on circulation and deposits of national banks	
From repayment of interest by Pacific Railway com-	
panies.....	
From customs' fees, fines, penalties, &c.....	
From fees—consular, letters-patent, and lands.....	
From proceeds of sales of Government Property.....	
From premium on sales of coin.....	
From premium on loans.....	
From profits on coinage, &c.....	
From revenues of the District of Columbia.....	
From miscellaneous sources.....	
Total ordinary receipts.....	

The ordinary expenditures for the same period wer

For civil expenses.....	
For foreign intercourse.....	
For Indians.....	
For pensions, including \$5,373,000 arrears of pensions.	
For the military establishment, including river and	
harbor improvements and arsenals.....	

For the naval establishment, including vessels, machinery, and improvements at navy-yards.....	\$15,125,126 84
For miscellaneous expenditures, including public buildings, light-houses, and collecting the revenue.	38,870,205 78
For expenditures on account of the District of Columbia.....	3,597,516 41
For interest on the public debt.....	105,327,949 00
For payment of Halifax award.....	5,500,000 00
Total ordinary expenditures.....	<u>266,947,883 53</u>
Leaving a surplus revenue of.....	<u><u>\$6,879,300 93</u></u>

Which was applied as follows:

To the redemption of United States notes, &c.....	\$31,617 50
To the redemption of fractional currency.....	705,158 66
To the redemption of six per cent. bonds for the sinking-fund.....	18,500 00
To increase of cash balance in the Treasury.....	6,124,024 77
	<u>6,879,300 93</u>

The amount due the sinking-fund for the year was \$36,955,604 63, leaving a deficiency on this account of \$30,076,303 70.

Compared with the previous fiscal year, the receipts for 1879 have increased \$16,711,159 70, in the following items: In customs revenue, \$7,079,367 50; in internal revenue, \$2,979,985 84; in premium on loans, \$1,496,943 25; in repayment of interest by Pacific Railroad companies, \$1,340,246 67; in profits on coinage, \$1,234,176 34; and in miscellaneous items, \$2,580,440 10. There was a decrease of \$647,853 94, as follows: In sales of public lands, \$154,962 31; in premium on sales of coin, \$308,997 92; in semi-annual tax on banks, \$115,552 64; and in proceeds of sales of Government property, \$68,341 07; making a net increase in the receipts from all sources for the year of \$16,063,305 76.

The expenditures show an increase over the previous year of \$32,223,731 26, as follows: In the War Department, \$8,271,512 88; in the Interior Department, \$8,561,292 11, (Indians, \$576,828 80, and pensions, \$7,984,463 31;) in the interest on the public debt, \$2,827,074 35; and in the civil and miscellaneous, \$12,563,851 92. There was a decrease of \$2,240,174 53 in the Navy Department; making a net increase in the expenditures of \$29,983,556 73.

REPORT OF THE SECRETARY OF THE TREASURY

FISCAL YEAR 1880.

For the present fiscal year the revenue, actual and estimated, will be as follows:

Receipts.	For the quarter ended September 30, 1879.	
	Actual.	
From customs	\$44,290,000	83,497 93
From internal revenue	29,000,000	109,691 81
From sales of public lands	1,000,000	17,383 61
From tax on circulation and deposits of national banks	3,000,000	360,569 60
From repayment of interest by Pacific Railway companies		252,427 40
From customs' fees, fines, penalties, &c.		239,579 20
From fees—consular, letters-patent, and lands		506,864 20
From proceeds of sales of Government property....		55,965 30
From profits on coinage, &c.		469,486 00
From revenues of the District of Columbia.....	1,000,000	238,864 00
From miscellaneous sources		109,334 10
Total receipts.....	79,000,000	843,663 00

The expenditures for the same period, actual and estimated, will be as follows:

Expenditures.	For the quarter ended September 30, 1879.	
	Actual.	
For civil and miscellaneous expenses, including public buildings, light-houses, and collecting the revenue	\$1,000,000	165,764 00
For Indians.....	1,000,000	448,748 00
For pensions—regular.....	1,000,000	892,742 00
For arrears of pensions.....	1,000,000	374,249 00
For military establishment, including fortifications, river and harbor improvements, and arsenals	1,000,000	104,897 00
For naval establishment, including vessels and machinery and improvements at navy-yards....	1,000,000	196,569 00
For expenditures on account of the District of Columbia.....	1,000,000	163,728 00
For interest on the public debt	3,000,000	736,685 40
Total ordinary expenditures.....	9,000,000	683,385 10

Total receipts, actual and estimated..... \$2,000,000,000

Total expenditures, actual and estimated..... 200,000,000

Leaving a balance of..... 1,800,000,000

After applying the balance of the special deposit of United States notes held in the Treasury for the redemption of fractional currency, amounting to \$8,375,934, to the payment of arrears of pensions, as directed in section 3 of the act approved June 21, 1879, the increased revenue derived during the months of July, August, and September of the present fiscal year, was fully absorbed by current expenses, and the payment of \$16,374,249 60 arrears of pensions accruing under the act approved January 25, 1879. Notwithstanding these unusual demands the Department has been able to purchase and apply to the sinking-fund, out of the surplus revenues for the month of October, \$10,050,000 six per centum bonds of 1881, and \$676,050 five per centum bonds, act of March 3, 1864, the latter of which is the excess of redemptions of these bonds over issues of four per cents. under the refunding acts; and unless unexpected appropriations, available for expenditure within this year, are made by Congress, the surplus revenues, in addition to paying off the balance of arrears of pensions, will probably enable the Department to apply to the sinking-fund account, during the year, the sum of \$24,000,000.

FISCAL YEAR 1881.

The revenues of the fiscal year ending June 30, 1881, estimated upon existing laws, will be—

From customs	\$152,000,000 00
From internal revenue.....	116,000,000 00
From sales of public lands	1,000,000 00
From tax on circulation and deposits of national banks	6,750,000 00
From repayment of interest by Pacific Railway com- panies	1,500,000 00
From customs' fees, fines, penalties, &c	1,100,000 00
From fees—consular, letters-patent, and lands.....	2,200,000 00
From proceeds of sales of Government property	200,000 00
From profits on coinage, &c.....	2,500,000 00
From miscellaneous sources.....	4,750,000 00
Total ordinary receipts	<u>288,000,000 00</u>

The estimates of expenditures for the same period, received from the several Executive Departments, are as follows:

Legislative	\$2,954,920 68
Executive	13,500,093 91
Judicial.....	399,300 00

Foreign intercourse	\$1, 185, 135 00
Military establishment	29, 319, 794 78
Naval establishment.....	14, 509, 147 95
Indian affairs	4, 992, 845 86
Pensions	32, 404, 000 00
Public works:	
Treasury Department	3, 121, 150 00
War Department	7, 557, 034 42
Navy Department.....	375, 000 00
Interior Department	508, 635 32
Department of Agriculture ...	6, 650 00
Postal service	7, 711, 900 00
Miscellaneous.....	17, 801, 520 75
Permanent annual appropriations:	
Interest on the public debt.....	88, 877, 410 00
Sinking-fund	39, 828, 225 72
Refunding—customs, internal revenue, lands, &c	5, 778, 600 00
Collecting revenue from customs	5, 500, 000 00
Miscellaneous.....	1, 766, 000 00
<hr/>	
Total estimated expenditures, including sink- ing-fund	278, 097, 364 39
<hr/>	
Or, an estimated surplus of.....	\$9, 902, 635 61
<hr/>	

Excluding the sinking-fund, the estimated expenditures will be \$238,269,138 67, showing a surplus of \$49,730,861 33.

The estimates of revenue for the next fiscal year are based upon the assumption that the increased receipts during the past few months are abnormal, and mainly due to the filling up of wants created by recent depression rather than by the actual increase of trade. These wants being supplied, the revenues for next year probably will not be increased beyond the amount estimated. The estimated expenditures for the same period are based upon the requirements of existing law and the necessary appropriations for public works in course of construction. The estimated surplus of \$9,902,635 61 will probably be exhausted by additional appropriations.

Should Congress increase the appropriations beyond this limit, or repeal or reduce existing taxes, other sources of revenue must be provided. Should this course be determined upon, which, however, the Secretary does not recommend, he would suggest, as a means of

meeting the deficiency, the restoration of a moderate duty on tea and coffee, and the levying of an internal tax upon manufactures of opium, as hereinafter more fully stated.

SINKING-FUND.

The Secretary calls the attention of Congress, in this connection, to the acts of February 25, 1862, and July 14, 1870, requiring the purchase or payment of one per centum of the entire debt of the United States within each fiscal year after the first day of July, 1862, to be set apart as a sinking-fund, and the interest in like manner to be applied to the purchase or payment of the public debt, as the Secretary of the Treasury may, from time to time, direct. These acts are regarded as imposing upon the Secretary the duty of providing for the sinking-fund out of the surplus revenues of the Government. It has been impossible to comply with these requirements during the past few years owing to the loss of revenue consequent upon the general depression of business throughout the country; but, as the prospects for increased revenues enlarge with the renewed activity in all branches of industry, it seems proper at this time to urge the importance of meeting the obligations created by these acts. It is estimated that \$39,828,225 72 will be required for this purpose during the next year. Appreciating the necessity for united action in this direction, this Department will heartily co-operate with Congress in the most rigid economy in the public expenditures under its charge, and to that end the Secretary invites careful consideration of the estimates of expenditures submitted by the several Executive Departments. Any appropriations beyond those actually demanded by the necessities of the Government will only impair the ability of the Secretary to carry these laws into effect.

With a view to promote economy the Secretary ventures to suggest for the consideration of the respective Houses, a permanent organization of an appropriation committee for each House, who shall have leave to sit during the recess, with power to send for persons and papers, and to examine all expenditures of the Government; that rule be adopted by the respective Houses limiting appropriation bills to items of appropriation and excluding legislative provisions; that all appropriations, except for the interest of the public debt, be limited to a period not exceeding two years, and that their expenditure be strictly confined to the period of time for which they are appropriated; and that all permanent and indefinite appropriations, made more than four years ago, except that for the public debt, be repealed.

RESUMPTION OF SPECIE PAYMENTS.

At the date of my last annual report, December 2, 1878, the preparation for the resumption of specie payments, provided for by the act approved January 14, 1875, had been substantially completed. On the first day of January, 1879, the day fixed for the resumption of specie payments, the reserve of coin, over and above all matured liabilities, was \$133,508,804 50.

Previous to that time, in view of resumption, United States notes and coin were freely received and paid in private business as equivalents. Actual resumption commenced at the time fixed by law, without any material demand for coin and without disturbance to public or private business. No distinction has been made since that time between coin and United States notes in the collection of duties or in the payment of the principal or interest of the public debt. The great body of coin indebtedness has been paid in United States notes at the request of creditors. The total amount of United States notes presented for redemption, from January 1 to November 1, 1879, was \$11,256,678. But little coin has been demanded on the coin liabilities of the Government during the same period though the amount accruing exceeded six hundred million dollars. Meantime coin was freely paid into the Treasury and gold bullion was deposited in the assay office and paid for in United States notes. The aggregate gold and silver coin and bullion in the Treasury increased, during that period, from \$167,558,734 19 to \$225,133,558 72, and the net balance available for resumption increased from \$133,508,804 50 to \$152,737,155 48.

In accordance with the position taken in the last annual report, United States notes have been received, since January 1, last, in payment of duties on imports.

To meet the local demand for coin, in places other than New York City, persons applying have been paid silver coin for United States notes, the coin being delivered to them on established express-lines free of expense; and for some time gold and silver coin has been freely paid out at the several sub-treasuries upon current obligations of the Government. There has been, however, but little demand for coin, and United States notes and the circulating-notes of national banks have been received and paid out at par with coin in all business transactions, public or private, in all parts of the country.

The specie standard, thus happily secured, has given an impetus to all kinds of business. Many industries, greatly depressed since the panic of 1873, have revived, while increased activity has been shown in all branches of production, trade, and commerce. Every preparation

for resumption was accompanied with increased business and confidence, and its consummation has been followed by a revival of productive industry unexampled in our previous history.

It is made the duty of this Department to maintain resumption, and for this purpose, in addition to the use of surplus revenue and the fund for resumption purposes, the Secretary is authorized to issue, sell, and dispose of, at not less than par in coin, either four, four and a half, or five per cent. bonds of the description set out in the refunding act, approved July 14, 1870. This act is based upon the idea that all the necessary expenditures of the Government appropriated for by Congress will be met by the current revenues, leaving the surplus revenues and the reserve-fund available for resumption. It is also provided by that act that the amount of United States notes to be redeemable on demand in coin shall be gradually reduced to the sum of \$300,000,000. The act approved May 31, 1878, increases the maximum of United States notes, upon which resumption is to be maintained, to the sum of \$346,681,016, the amount outstanding at the date of the passage of the act. It also provides as follows: "And when any of said notes may be redeemed or be received into the Treasury under any law from any source whatever and shall belong to the United States, they shall not be retired cancelled or destroyed but they shall be reissued and paid out again and kept in circulation."

This act must be construed in connection with the provision of the Constitution, that "no money shall be drawn from the Treasury but in consequence of appropriations made by law." The reserve-fund created by the resumption act could not, without further legislation, be applied to the payment of current appropriations. Nor is it to be presumed that Congress will omit to provide ample revenues to meet such appropriations. Therefore, under existing law, the notes received into the Treasury in exchange for coin will always be available for the purchase of or exchange for coin or bullion. Any United States notes in the Treasury may be exchanged for coin under the authority of section 3700, Revised Statutes. When notes cannot be used at par for that purpose they must necessarily remain in the Treasury. To avoid all uncertainty, it is respectfully recommended that by law the resumption-fund be specifically defined and set apart for the redemption of United States notes, and that the notes redeemed shall only be issued in exchange for or purchase of coin or bullion.

The great convenience and easy transportation of notes has thus far enabled the Treasury to exchange them for coin or bullion at all the centres of production of gold and silver in this country, and also to pa

for large sums of foreign coin at the assay office in New York without any material draft on the resumption-fund; and it is believed that this voluntary exchange will, in ordinary times, furnish the Treasury with all the coin necessary. It would be only in an emergency not easy to foresee, and not likely to arise, that the power to sell bonds for resumption purposes would be exercised, but it should be preserved to meet any extraordinary demand for the redemption of notes which might possibly occur.

The Secretary is, therefore, of opinion that the provisions of existing law are ample to enable the Department to maintain resumption even upon the present volume of United States notes. In view, however, of the large inflow of gold into the country and the high price of public securities, it would seem to be a favorable time to invest a portion of the sinking-fund in United States notes, to be retired and cancelled, and in this way gradually to reduce the maximum of such notes to the sum of \$300,000,000, the amount fixed by the resumption act.

The Secretary respectfully calls the attention of Congress to the question whether United States notes ought still to be a legal-tender in the payment of debts. The power of Congress to make them such was asserted by Congress during the war, and was upheld by the Supreme Court. The power to reissue them in time of peace, after they are once redeemed, is still contested in that court. Prior to 1862, only gold and silver were a legal-tender. Bullion was deposited by private individuals in the mints and coined in convenient forms and designs, indicating weight and fineness. Paper money is a promise to pay such coin. No Constitutional objection is raised against the issue of notes not bearing interest to be used as a part of the circulating medium. The chief objection to the emission of paper money by the Government grows out of the legal-tender clause, for without this the United States note would be measured by its convenience in use, its safety, and its prompt redemption. In war, and during a grave public exigency, other considerations may properly prevail; but it would seem that during peace, and, especially, during times of prosperity and surplus revenue, the promissory note of the United States ought to stand like any other promissory note. It should be current money only by being promptly redeemed in coin on demand. The note of the United States is now received for all public dues, it is carefully limited in amount, it is promptly redeemed on demand, and ample reserves in coin are provided to give confidence in and security for such redemption. With these conditions maintained the United States note will be readily received and paid on

all demands. While they are maintained, the legal-tender clause gives no additional credit or sanction to the notes, but tends to impair confidence and to create fears of over-issue. It would seem, therefore, that now and during the maintenance of resumption it is a useless and objectionable assertion of power, which Congress might now repeal on the ground of expediency alone. When it is considered that its constitutionality is seriously contested, and that from its nature it is subject to grave abuse, it would now appear to be wise to withdraw the exercise of such a power, leaving it in reserve to be again resorted to in such a period of war or grave emergency as existed in 1862. The Government derives an advantage in circulating its notes without interest, and the people prefer such notes to coin, as money, for their convenience in use and their certain redemption in coin on demand. This mutual advantage may be secured without the exercise of questionable power; nor need any inconvenience arise from the repeal of the legal-tender clause as to future contracts. Contracting parties may stipulate for either gold or silver coin or current money. In the absence of an express stipulation for coin the reasonable presumption would exist that the parties contemplated payment in current money, and such presumption might properly be declared by law and the contract enforced accordingly.

The Secretary, therefore, respectfully submits to Congress whether the legal-tender clause should not now be repealed as to all future contracts, and parties be left to stipulate the mode of payment. United States notes should still be receivable for all dues to the Government, they should be promptly redeemed on demand, and ample provision made to secure such redemption.

COINS AND COINAGE.

The operations of the mints and assay offices during the year, and their condition at the present time, are exhibited in the report of the Director of the Mint.

The report also contains recommendations for increasing the effectiveness of that branch of the service and furnishes information relative to the amount of specie in the country, and the production of the mines of the United States, and statistics, brought up to recent dates, of the currency of the principal countries of the world, of the rates of production of the precious metals, and of their consumption in coinage, and in the arts and manufactures.

The value of the gold coinage executed during the year

was	\$40, 986, 912 00
Of standard silver dollars.....	27, 227, 500 00
Of subsidiary silver coin.....	382 50
Of minor coin.....	97, 798 00
Total	<u>68, 312, 592 50</u>

Gold and silver were separated in the refineries of the mints and the assay office at New York in the amount of \$20,759,549 97 in gold, and \$10,687,526 97 in silver, a total of \$31,447,076 94, and fine and unparted bars were made in the amount of \$12,976,812 68 of gold, and \$9,045,802 11 of silver.

The mints and assay offices generally are in excellent condition, and their capacity is sufficient to meet the demand for coinage and bars.

The gold coinage since 1862, about which time it disappeared from circulation, has been principally in double-eagles, but during the last year over nine per cent. of the gold coins struck were in pieces of smaller denomination. The coinage of eagles and half-eagles will be continued until the demand for small gold coin is supplied.

The coinage of standard silver dollars has been kept fully up to the requirements of law, notwithstanding the difficulty experienced in procuring silver bullion for the mints at San Francisco and Carson, at market rates.

The amount of silver coin of less than a dollar provided for by law having been executed, the coinage of this money has been suspended.

The demand for minor coins, particularly for the one-cent piece, has been pressing.

The bullion production from the mines of the United States for the last year is estimated by the Director to be nearly eighty million dollars, the proportions of gold and silver being about equal. The year's total production is less than that of the preceding year, caused by a diminution in the yield of the mines of Nevada, which was not compensated by increased production in other places.

The Director estimates the coin in the country on October 31, 1879, at \$305,750,497 of gold, and \$121,456,355 of silver. The bullion in the mints and New York assay office at that date awaiting coinage amounted to \$49,931,035 of gold, and \$4,553,182 of silver, making the total amount of coin and bullion \$481,691,069.

The estimating of the specie in the country at any given time is always difficult; but this estimate appears to have been carefully prepared from coinage reports and statistics of recoinage, export, and import.

The amount of gold and silver annually used in the arts and manufactures forms no inconsiderable factor in estimating the production of the mines or the specie available for circulation, and an attempt has been made to arrive at the amounts so used from the records of the New York assay office, which furnishes the principal part of the metals consumed for these purposes, and from reports of the manufacturers. The general result, while incomplete in details, indicates that the total consumption for purposes other than coinage is in excess of estimates heretofore made.

In the last annual report, the Secretary stated:

"It would seem to be the best policy for the present to limit the aggregate issue of our silver dollars, based on the ratio of sixteen to one, to such sums as can clearly be maintained at par with gold, until the price of silver in the market shall assume a definite ratio to gold, when that ratio should be adopted and our coins made to conform to it; and the Secretary respectfully recommends that he be authorized to discontinue the coinage of the silver dollar when the amount outstanding shall exceed fifty million dollars."

He again respectfully calls the attention of Congress to the importance of further limiting the coinage of the silver dollar. The market value of the bullion in this coin has been during the past year from ten to sixteen per cent. less than the market value of the bullion in the gold dollar. The total amount of silver dollars coined to November 1, 1879, under the act of February 28, 1878, was \$45,206,200, of which \$13,002,842 was in circulation, and the remainder, \$32,203,358, in the Treasury at that time. No effort has been spared to put this coin in circulation. Owing to its limited coinage it has been kept at par; but its free coinage would soon reduce its current value to its bullion value, and thus establish a single silver standard. The inevitable result would be to exclude gold coin from circulation. It is impossible to ascertain what amount of silver coin, based upon the ratio of sixteen of silver to one of gold, can be maintained at par with gold, but it is manifest that this can only be done by the Government holding in its vaults the great body of the silver coin. It would seem that nothing would be gained by an unlimited coinage unless it is desirable to measure all values by the silver standard. The Secretary cannot too strongly urge the importance of adjusting the coinage ratio of the two metals by treaties with commercial nations, and, until this can be done, of limiting the coinage of the silver dollar to such a sum as, in the opinion of Congress, would enable the Department to readily maintain the standard dollars of gold and silver at par with each other.

REFUNDING.

On the 23d of November, 1878, at which date the refunding transactions were brought in the last annual report, there had been issued of four per cent. consols for refunding purposes \$144,770,900, and there remained at that time bonds redeemable as follows:

Authorizing act.	Rate of interest.	Amount.
March 3, 1865	6 per cent..	\$371,424,800
June 14, 1858.....	5 per cent..	260,000
March 3, 1864, (10-40's)	5 per cent..	194,566,300
Total .....	.....	566,251,100

In that report the attention of Congress was called to the three-months' public notice required by law to be given to holders of bonds called for redemption, with the recommendation that the law be so modified that the notice be, at the discretion of the Secretary, not less than ten days nor more than three months. As no action was taken upon this recommendation, on January 1, 1879, the four per cent. loan was offered to the public without changing the period of the notice; and, in view of the practical effect of resumption, the Secretary offered to receive United States notes in payment for the bonds sold.

The bonds were rapidly sold in this country, and the resulting redemptions of five-twenties, many of which were held in Europe, rendered desirable the sale of the bonds in London sufficient to prevent the shipment of gold from this country. To attain this object a contract was made on the 21st day of January, 1879, with certain banks and bankers, under which they agreed to subscribe at once for \$10,000,000 of four per cent. bonds, with option of taking \$15,000,000 more by monthly subscriptions of \$5,000,000 during April, May, and June. On the part of the Government the bonds were to be delivered free of charge in London, at which place an agency was to be maintained during the continuance of the contract. Under this contract \$15,000,000 of bonds were taken.

In the meantime, under authority of the act of January 25, 1879, the Secretary offered to exchange four per cent. bonds for uncalled five-twenties. The amount of five-twenties so exchanged was \$806,000.

On March 4, notice was given that when the remaining five-twenties should be covered by subscriptions, the sale of four per cents for refunding the ten-forty bonds would probably be made upon less favorable terms to the purchaser. Owing partly to fears that the heavy pay-

ments falling due in April and May would create a disturbance in the money market, there was a falling off in the sales of bonds during the month of March. Measures were successfully taken by the Department to secure the adjustment of the accounts of purchasers of the bonds without embarrassment to the business interests of the country.

On the morning of April 4, the amount of outstanding five-twenties not covered by subscriptions to the four per cents. was \$59,565,700. Before the close of business on that day subscriptions were received sufficient to refund the remaining five-twenties, and in accordance with previous notice the offer of January 1 was rescinded. Additional subscriptions were received and rejected, amounting to \$60,919,800.

The refunding of the five-twenties having been accomplished—and no other six per cent. bonds being redeemable—on April 16, \$150,000,000 of the four per cent. bonds were offered at a premium of one-half of one per cent., the proceeds to be applied to the redemption of the five per cent. bonds issued under the act of March 3, 1864, known as ten-forties, reserving the residue, \$44,566,300, necessary for the redemption of the entire loan, for the conversion of refunding certificates offered at the same time. The four per cent. bonds were also offered in exchange for any outstanding uncalled ten-forty bonds.

On the following day subscriptions amounting to \$149,389,650 were received and accepted, and \$34,755,000 received and declined, and the offers of the four per cent. bonds were withdrawn. One subscription for \$40,000,000 of the certificates was also received and declined, the evident purpose of the law authorizing the issue of these certificates being to cause, as far as practicable, a distribution of the public debt among the people. Exchanges were also made in the amount of \$2,089,500.

On April 21, a call was made for the remainder of the ten-forty bonds, and on the 23d, a call was made for \$260,000, loan of 1858, thus completing the redemption of all outstanding redeemable bonds bearing interest at five per cent.

On March 12, 1879, independent-treasury officers were authorized to exchange the ten-dollar certificates, authorized by the act of February 26, 1879, at par for lawful money, and the Treasurer of the United States was authorized to issue them upon the certificate of any national bank designated for the purpose. To facilitate and distribute the sale of these certificates, national banks and public officers were invited to become depositaries for this purpose, as authorized and provided by sections 3639 and 5153, Revised Statutes of the United States.

Each certificate was prepared in the denomination of \$10, and bore

REPORT OF THE SECRETARY OF THE

interest at the rate of four per cent. per annum which time the quarterly interest began on the into which the certificates were convertible in su-
ples. Any person subscribing could, at his option registered in his name on the books of the Depa

Immediately upon the advance by the Depa the four per cent. bonds to one-half of one p demand for these certificates greatly increased premium corresponding to the premium on the were convertible were received, but the act issued not only authorized but directed them t for lawful money, thus apparently preventing premium, and the offers were therefore declined

To bring them within the reach of small April 18, their sale was restricted to indep and public officers bonded for that purpose, ceeding \$100 at one time. Evasions of the instructions, however, with a view of immediat tificates into bonds, soon became evident, and, selling the certificates were directed to refuse t was manifest. At the same time commissions amounts, were greatly reduced, and the conver into bonds was postponed until July 1, 1879. however, disposed of as rapidly as the certifica and before the close of the fiscal year.

In response to the invitation to become depo certificates, five hundred and nine public national banks were designated for the purp sales.

The certificates were sold as follows:

By public officers designated as depositaries.	
By national banks.....	- - -
By independent-treasury officers.....	- - -
In all.....	- - -

of which amount there had been converted, i to the close of business October 31, 1879, standing \$2,809,400.

Thus, since November 23, 1878, to which date brought in the last annual report, there have been six per cent. and \$193,890,250 five per cent. bor

into bonds bearing interest at four per cent., making an annual saving of interest hereafter of \$9,355,877 50.

The following table shows the transactions in refunding since March 1, 1877, and the annual saving of interest therefrom:

Title of loan.	Rate per ct.	Am't refunded.	Annual interest charge.
Loan of 1858	5	\$260,000	\$9,707,512 50
Ten-forties of 1864	5	193,890,250	
Five-twenties of 1865	6	100,436,050	39,071,742 00
Consols of 1865	6	202,663,100	
Consols of 1867	6	310,622,750	
Consols of 1868	6	37,473,800	
Total		845,345,950	48,779,254 50

In place of the above bonds there have been issued bonds bearing interest as follows:

Title of loan.	Rate per ct.	Amount issued.	Annual interest charge.
Funded loan of 1891	4½	\$135,000,000	\$6,075,000
Funded loan of 1907, including refunding certificates	4	710,345,950	28,413,830
Total		845,345,950	34,488,830

making a saving in the annual interest since March 1, 1877, of \$14,290,416 50.

These transactions have been accomplished without the loss of a dollar, and without appreciably disturbing the current business of the country. In a few days copies of the contracts, circulars, important correspondence, and accounts pertaining thereto, and also to resumption, will be laid before Congress.

The entire transactions in refunding since 1870 have been as follows

Title of loan.	Rate per ct.	Am't refunded.	Annual interest charge.
Loan of 1858	5	\$14,217,000	\$10,405,362 50
Ten-forties of 1864	5	193,890,250	
Five-twenties of 1862	6	401,143,750	71,234,322 00
Five-twenties of March, 1864	6	1,327,100	
Five-twenties of June, 1864	6	59,185,450	
Five-twenties of 1865	6	160,144,500	
Consols of 1865	6	211,337,050	
Consols of 1867	6	316,423,800	
Consols of 1868	6	37,677,050	
Total		1,395,345,950	81,639,684 50

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In place of the above bonds there have been issued interest as follows:

Title of loan.	Rate per ct.	Total issued.
Funded loan of 1881	5	\$500,000,00
Funded loan of 1891	4½	185,000,00
Funded loan of 1907, including refunding certificates	4	710,345,9
Total		1,395,345,9

making an annual saving hereafter in the interest of refunding operations of \$19,900,846 50.

The following-described bonds will mature in 1880

Authorizing act.	Rate of interest.	Date mature
February 8, 1861	6	Dec. 31
July 17 and August 5, 1861	6	June 30
March 3, 1863	6	June 30
March 2, 1861	6	July
July 14, 1870, and January 20, 1871	5	May
Total		

Of these bonds, the loan of February 8, 1861, is payable upon the demand of the holders be provided for from the surplus revenues.

Under the refunding acts of July 14, 1870, and bonds for refunding purposes were authorized \$1,500,000,000. Of this amount there have been stated, \$1,395,345,950, leaving available for future tions \$104,654,050.

It is respectfully suggested that authority be given session of Congress to issue, sell, and dispose of, at in coin, four per cent. bonds of the description set for of July 14, 1870, and refunding certificates of the des in the act of February 26, 1879, with like qualities exemptions, except as hereinafter stated, to the ex redeem the bonds falling due on or before July 1, 1881 and to use the proceeds for that purpose.

It is hoped that the advancing credit of the count Secretary to sell such bonds and certificates at a pre better to maintain the general conditions of the four pe

than to undertake to sell a bond at lower interest. The four per cent. consol is now universally known. The rate of interest is as low as will generally maintain the bond at par, and the premium will measure its advance above par at favorable periods. The certificates should bear the same rate and be sold on the same terms as the bonds. It is important that the authority granted should include the power to refund, from the passage of the act at the present session, and to prepay the excess of interest on the bond to be refunded prior to its maturity. The present is believed to be an exceptionally favorable time for such refunding.

THE NATIONAL BANKS.

The report of the Comptroller of the Currency gives complete statistics relative to the operations of the national-banking system from its organization until the present time. The number of banks in operation on October 2 of the present year, the date of their last reports, was 2,048, and the aggregate capital, \$454,067,365; surplus, \$114,786,528; individual deposits, \$719,737,568; specie, including United States coin certificates, \$42,173,731 23; legal-tender notes, including United States certificates, \$95,973,446; loans, \$875,013,107. The total circulation outstanding on November 1 was \$337,181,418.

Among the subjects discussed in the report are the relations which have existed between the national banks and the Government in the resumption of specie payments, and in the funding of the public debt. In both of these important financial operations the co-operation of the national banks has been of essential service to the Government. The banks, in the aggregate, have constantly kept on hand, as reserves nearly one-fourth of the entire amount of legal-tender notes outstanding which, together with the coin, is much in excess of the amount of the reserves required by law. They have constantly held as security for their circulating-notes, and for Government deposits and other purposes, more than one-fifth of the interest-bearing debt of the United States. They have maintained their legal reserves in the Treasury for the redemption of their circulating-notes, and such redemption has been made without failure or delay at their expense. In this mode exchanges have been made between all parts of the country at the lowest possible rates.

The effect of the business depression prevalent from 1873, until the resumption of specie payments, upon the national banks, is shown in the losses which they have sustained and the dividends which many have been compelled to pass; also by the noticeable diminution, from year to year, in the aggregate surplus.

The aggregate capital and deposits of banks, other than national, is also given ; and such other information, in reference to these banks, as could be obtained from the officers who have charge of the execution of the banking laws in the different States.

The very large taxes paid by national banks to the National, State, and municipal authorities, have been a great aid in relieving other property from the burden of taxation, and, in the aggregate, are more than the interest at four per cent. on their entire circulation. Thus the large amount of non-taxable United States bonds held by them became taxable, and these taxes are in effect paid for the franchise they enjoy of issuing circulating-notes.

The cost of liquidating the affairs of national banks which have been placed in the hands of receivers since the establishment of the system is, for the first time, given in the report, and will serve to correct the impression, which has to some extent prevailed, that too great a portion of the assets of such banks have been expended in the settlement of their affairs.

Tables are also given showing the loss to depositors and also other creditors through the insolvency of national banks; and these losses are compared with similar losses incurred by the creditors of insolvent banks other than national, and the comparison is exceedingly favorable to the national system.

The circulation of the banks which, since the passage of the act of January 14, 1875, has largely decreased, is now increasing in its aggregate amount, showing that the system responds promptly to the varying requirements of business.

The advantages of this system over any system of banks hitherto devised are that their circulating-notes are secured beyond peradventure of loss; they are of universal credit in the country wherever issued; they are more perfectly protected from counterfeiting; they equalize exchanges between distant parts of the country; they are promptly redeemed on demand at one common place; the banks are subject to a strict and vigilant surveillance by independent officers of the Government; their condition is frequently made known to the public; and they contribute a very large percentage of their profits in the way of taxes. A system of banking that, after an existence of sixteen years, through war and periods of great inflation and great depression, has produced such results, may fairly appeal for the confidence and support of Congress.

PUBLIC MONEYS.

The monetary transactions of the Government have been conducted through the offices of the United States Treasurer, nine assistant treasurers, five hundred and ten depositaries, and two hundred and twenty-two national-bank depositaries.

The receipts of the Government from all sources have amounted during the last year, as shown by warrants, to \$1,066,634,827 46, of which \$792,807,643 have been received from loans; \$137,250,047 70 from customs; \$113,561,610 58 from internal revenue; and \$23,015,526 18 from sales of land and from miscellaneous sources. These receipts were deposited as follows:

In independent-treasury offices.....	\$413,363,508 43
In national-bank depositories.....	653,271,319 03

These transactions have been conducted without loss, and it may be stated that all officers engaged in the collection or safe-keeping of the revenues of the Government have collected and held the moneys without loss until properly transferred or paid out, and that as far as accounts have been adjusted there appear to be no losses by defaults in disbursements, the trifling balances not adjusted being suspended mainly for information or investigation.

In this connection attention is invited to the suggestions of the First Comptroller of the Treasury, as set forth in his report, in regard to the importance of prescribing by law the frequency and manner in which the current accounts of the disbursing officers of the Departments should be subjected to investigation, the danger to the Treasury of issuing duplicate bonds in lieu of coupon bonds alleged to have been destroyed, and the importance of defining the word "claim" as used in section 3477, Revised Statutes of the United States, and to other suggestions of that officer.

REVENUE FROM CUSTOMS.

The disbursements for collecting the revenue from customs for expenses incurred within the following fiscal years, have been as follows:

In 1877.....	\$6,304,279 57
In 1878.....	5,525,787 32
In 1879.....	5,485,779 03

This shows a reduction for 1878 over 1877 of \$778,492 25, and a reduction for 1879 over 1878 of \$40,008 29, making a total saving for the two years of \$818,500 54.

A marked improvement has also occurred during the past year in the collection of the revenue from customs.

The revenue under the ad valorem system has fallen short of the amount which should have been collected upon a proper assessment of the real foreign-market value. This was due to a system of undervaluations in the entries at the custom-houses, especially upon goods consigned by foreign manufacturers to agents in the United States. Evidence of such undervaluations has been obtained in many cases, and upon this evidence the invoice prices have been advanced by the local appraisers, and from these advances appeals for reappraisement have been taken in a large number of cases.

The number of such reappraisements had at the port of New York for the years ending June 30, from 1875 to 1878, is as follows:

1875.....	167
1876.....	262
1877.....	207
1878.....	278
1879.....	556

The general appraiser at New York states that, according to the reappraisements demanded since the 30th of June last, the total number for the current fiscal year, at that port, will be likely to reach one thousand.

The action of the local appraisers has, however, been generally sustained on the reappraisements, but the embarrassments resulting therefrom show that some method should be adopted by which such questions may be better disposed of than is permitted by the laws now in force.

One method suggested is the adoption of specific duties in place of ad valorem. This change could, it is believed, be safely adopted with proper limitations in regard to kid gloves, piece-silk goods, piece velvets, and some other classes of goods which now pay an ad valorem duty, and which constitute the chief ground of dispute as to value between the Government and the importers.

Another plan would be to permit the Government, in case of an undervaluation, to take the goods at the invoice price, with a reasonable sum added for freight and other expenses and profit, and then cause sale of the goods to be made on Government account. By a treaty between France and Italy, made some years since, it was provided that goods ascertained by inspection to be undervalued to the extent of five per cent. might be seized and sold by the Government, the importer receiving his own valuation for the goods, together with a profit of five

per cent. A similar plan adopted in England had the effect of breaking up this system of undervaluation.

The Senate Committee on Finance recommended the adoption of a similar measure in its report on the bill which increased the duty on woollen goods, which became a law March 2, 1867; but it was not adopted by Congress. It contemplated that the Government might take the goods at the importer's valuation, with an addition thereto of ten per cent. for expenses and profit.

The Secretary is convinced that if the ad valorem system on the classes of goods named, as well as on some others, is continued, the adoption of a plan of this character will prove beneficial to the honest importer as well as to the interests of the Government.

The difficulties attendant upon the collection of duties on sugars under the Dutch-color standard, which were alluded to in the last report of this Department, continued during the past year. Sugar continued to be imported which had either been artificially colored by the addition of foreign substances, or which, by the process of manufacture, had been so radically changed as to produce sugars of the highest saccharine strength, while possessing the lowest grades of color prescribed by the Dutch standard.

It has been held by the courts that Congress, in imposing the duty upon sugars according to their color, meant the true color of the sugar which is developed by the ordinary process of manufacture, and which indicates the degree of perfection to which the process of clarification has been carried.

Acting upon this view, the Department issued instructions to its customs officers that where the degree of saccharine strength, as compared with the color, showed that the sugar had not been manufactured in the mode contemplated by law, duties should be collected according to the true color of the sugar; and, for the purpose of carrying out this view, definite relations were established between the color and the strength. These instructions have had the effect of repressing the importation of the objectionable classes of sugars before referred to, and of producing a more faithful collection of the duties upon sugars imported, according to the true intent and meaning of the law. Until the matter is settled, this Department will maintain the position it has heretofore assumed, of disregarding the apparent color of the sugar where the facts justify it, and assessing duties upon the true color of the sugar under the theory above stated.

By the adoption of new regulations at the port of New York, respecting the weighing of sugar, the difference between the invoice weight

and the actual weight, as returned by the Government weighers, has been reduced from $10\frac{7}{10}$ per cent. in 1877, to $4\frac{7}{10}$ per cent. in 1879, making a saving to the Government in duties of fully three million dollars.

Reference is made in another part of this report to circumstances under which it may become necessary to reimpose the duties upon tea and coffee, should additional revenue be required. Such revenue can better be derived from those sources than from any other. The duties formerly in force were specific, and therefore no troublesome questions of value intervened. The articles are bulky and hence cannot be easily smuggled, and the additional cost created by the duty would be so slight as scarcely to be felt by the people.

Some complaint has arisen in regard to the manner in which examinations of passengers' baggage have been made at the port of New York. The system of examinations necessary to carry out the law, has made the customs officers obnoxious to many people, but any system of examination sufficient to detect or prevent smuggling will be offensive to the parties concerned. It has been the aim of the officers of this Department to apply the law equally to all persons. The annoyances incidental to the system have been increased by the lack of facilities to make the examinations with proper dispatch. It is thought, however, that the latter cause of complaint will be removed upon the completion of the new barge office, already authorized by Congress. The duties collected on passengers' baggage at the port of New York, during the three years ended the 30th of June last, were as follows:

Year.	Duties collected.
1877.....	\$63,030 11
1878.....	86,760 64
1879.....	171,857 51

The law does not define any limit of quantity or value in regard to either household or personal effects of persons arriving in the United States, which may be admitted free of duty, and it is recommended that a limitation governing the free entry of these classes of articles may be established by Congress.

OPIMUM.

Large quantities of opium prepared for smoking are brought into the United States, and this article, being of small bulk and great value, is easily smuggled. A similar article is manufactured in the United

States from the crude opium, and in endeavoring to ascertain whether in any given case, the article has been smuggled, it has been found difficult to determine whether it is of domestic or foreign manufacture.

The imported article now pays a duty of \$6 per pound. It is one that will bear a high rate of taxation, and it is recommended that an internal tax upon opium, prepared in the United States for smoking, of an amount equal to the duty upon the imported article, to be paid by stamps, be adopted. This would yield a considerable revenue, without repressing any enterprise which should receive encouragement at the hands of Congress. It is also recommended that provision be made for affixing customs-stamps to packages of imported opium prepared for smoking, in the manner now required in the case of imported cigars, and that opium prepared for smoking, imported into the United States or manufactured in the United States, found without proper stamps, be made liable to seizure and forfeiture.

RICE.

The total importations of rice during the last fiscal year amounted to 75,824,923 pounds. Of this quantity 59,430,871 pounds were imported into San Francisco, and about 55,000,000 pounds came from China. A large part was undoubtedly consumed by the Chinese on the Pacific coast, who are not citizens of the United States, and who have no intention of becoming such.

The article will bear a higher rate of duty than that now imposed by law without materially enhancing the cost of living to the general consumer.

INTERNAL REVENUE.

The receipts from the several sources of taxation under the internal-revenue laws for the fiscal year ending June 30, 1879, were as follows :

From spirits.....	\$52, 570, 284 69
From tobacco	40, 135, 002 65
From fermented liquors.....	10, 729, 320 08
From banks and bankers.....	3, 198, 883 59
From penalties, &c.....	279, 497 80
From adhesive stamps.....	6, 706, 384 06
From arrears of taxes under repealed laws	299, 094 00
<hr/>	
Total	113, 918, 466 87
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The amount of collections shown by the foregoing table includes commissions on sales of stamps, paid in kind, as well as amounts collected in 1878, but not deposited till the last fiscal year. There thus arises an apparent variation between the amounts of collections given in the table and those shown by the covering-warrants of the Treasury.

The increase of the revenue from spirits during 1879 was \$2,149,468 89; the increase from tobacco for the same year was but \$42,247 98. The chief sources of internal revenue are spirits, tobacco, and fermented liquors, which yield this year an income of \$103,434,607 42, out of a total internal revenue of \$113,918,466 87. The very large proportion of the revenue derived from those sources is, of itself, an argument for the stability of the rates of taxation upon them.

The simple agitation of the question of the reduction of the tobacco tax caused a temporary suspension of operations in the various manufactures of tobacco, and is estimated by the Commissioner of Internal Revenue to have caused a diminution in the receipts from tax on that article during the first half year of 1878, of nearly two millions of dollars. Besides reducing the income from the tax, the uncertainty arising from an anticipation of a change of rates, by suspending production, threw multitudes of work-people out of employment.

The change of rates in the tax on tobacco and spirits, or the anticipation of such a change, tends at once to diminish the revenue, disorganize the industries relating to those commodities, and to derange trade. The demand for change of rates does not originate with the consumers, who pay the greater part of the tax, but chiefly with those who seek an enhancement of profit on the capital invested in the manufacture.

The falling off in the income from tobacco that may be anticipated from the last reduction in the rate of taxation (estimated as likely to amount to one-third of the tax collected in the last fiscal year) should be regarded as an admonition that, in the interest of the public revenue as well as of industry and commerce, no further change in the established rates of taxation should, for the present, be made.

COMMERCE AND NAVIGATION.

The total tonnage of vessels of the United States, as shown by the records of the Register's bureau, at the close of the fiscal year ended June 30, 1879, was 4,169,600 tons. Of this tonnage 1,491,533 tons represented 2,717 vessels registered for the foreign trade, and 2,678,067 tons represented 22,491 vessels enrolled and licensed and engaged in the coasting or domestic trade. There has been an increase of 94,350

tons employed in domestic trade, and a decrease of 137,514 tons employed in the foreign trade by sea, as compared with the tonnage of last year.

The vessels built during the year are classed as follows :

	Number.	Tonnage.
Sail-vessels	468	66, 86
Steam-vessels	335	86, 36
Canal-boats enrolled	36	4, 06
Barges	293	35, 73
	1, 132	193, 03

The vessels built in 1878 comprised 235,504 tons, being slightly in excess of the number built during the past year.

The total tonnage of vessels entered at the seaboard ports from foreign countries was 11,530,527 tons during the year ended June 30, 1878, and 13,768,137 tons during the last fiscal year, showing an increase of 2,237,610 tons, or about 19 per cent. The American tonnage entered exhibited an increase of only 40,306 tons, or 1 per cent while the foreign showed an increase of 2,197,304 tons, or nearly 2 per cent. The tonnage in these cases is computed on the basis of the number of entries of vessels, and not on the number of vessels, and is restricted to the seaboard ports. Of the total amount of merchandise brought in at seaboard, lake, and river ports, during the last fiscal year an amount of the value of \$143,599,353 was imported in American vessels, and \$310,499,599 in foreign ; of the exports, a value of \$128,425,333 was shipped in American, and \$600,769,633 in foreign vessels. Of the combined imports and exports, 23 per cent. only of the total value was conveyed in American vessels.

In 1857, over 75 per cent. of the merchandise imported and exported was carried in vessels of the United States; at present, but 23 per cent., as stated, is carried in such vessels, though the total volume of the trade has risen from a value of nearly seven hundred, to nearly twelve hundred, millions of dollars.

It is neither to the advantage nor the honor of the country that so immense a proportion of its foreign carrying trade has passed to other nations.

The great decline in our tonnage, as is well known, was due to the war; and soon after its close it was proposed to facilitate the restoration to our merchant-marine of vessels that had been transferred to foreign flags. But the effort at restoration failed, and a special prohibition against the return of such vessels was embodied in the statute

It may well be questioned whether the severity of the existing statute might not properly be relaxed after the lapse of so long a time, during which the privilege of registry has been denied to this class of vessels, and since the grounds for denial have, in a measure, lost their original force. It has always been the policy of the law to restrict the privileges of American registry to vessels built in this country. The object was to further the ship-building and naval interests of the country; and this policy was so successful as to advance the United States to the second rank among nations as respects tonnage and the number of its ships. While wood was the article mainly used in the construction of ships, we had the advantage over foreign nations in the cost of material. Our ship-builders could not only supply vessels for domestic commerce, but could successfully compete in the carrying trade of the world. The use of iron in ship-building, in place of wood, is, however, steadily increasing, and in the cost of iron and in the price of labor other commercial nations have the advantage. It is a grave question of public policy whether the period has not arrived when the unlimited right of purchase, as under the English statutes, should be extended to vessels as well as to other commodities, and when admission to American registry upon the payment of duties should be allowed thereupon importation. The recovery of our old position in the carrying trade will more than counterbalance any disadvantage likely to ensue from a modification of restrictions upon the right of purchase, while a moderate duty on ships imported will enable our ship-builders to compete successfully in the construction of iron vessels of the largest class. The proper policy to be pursued is difficult to determine, but the great importance of considering the subject is respectfully submitted to the attention of Congress.

EXPORTS AND IMPORTS.

The exports and imports of the United States during the last fiscal year, are as follows:

Exports of domestic merchandise.....	- - - - -	
Exports of foreign merchandise.....	- - - - -	\$698,340,700
Total.....	- - - - -	12,098,651
Imports of merchandise.....	- - - - -	710,439,441
Excess of exports over imports....	- - - - -	445,777,775
	- - - - -	264,661,666

Compared with the previous year, the imports are greater by \$8,726,243, and the exports by \$15,573,675.

imports are greater by

The annual average of the excess of such imports over exports for the ten years ended June 30, 1873, is \$104,706,922; but during the last four years there has been an excess of exports over imports as follows: In 1876, \$70,643,481; in 1877, \$151,152,094; in 1878, \$257,814,234; and in 1879, \$264,661,666.

The total gold value of exports of domestic merchandise from the United States has increased from \$275,166,697 in 1869, to \$698,340,790 in 1879, an increase of 154 per cent. With one or two unimportant exceptions, the United States stands alone among the commercial nations in having an excess of exports over imports of merchandise.

The increase in the values of our exports is derived mainly from breadstuffs, preserved meats, copper, live animals, agricultural implements, furs and fur-skins, distilled spirits, and refined sugar. Many other articles exhibit a large increase in the quantity exported, but a decrease in value owing to their lower prices. The articles which show the greatest increase in the quantities exported are wheat, flour, oats, corn, rye, copper, cotton, petroleum and other oils, provisions, (excepting beef and lard,) quicksilver, distilled spirits, starch, sugar, molasses, tallow, and leaf tobacco.

The value of the exports of breadstuffs from the United States during the last fiscal year, amounted to \$210,355,528, and constituted 30 per cent. of the total value of our exports of domestic merchandise. The value of breadstuffs exported during the year 1873, amounted to only \$98,743,151.

The almost unlimited capacity of the western and northwestern States for the production of cereals, in connection with the facilities for cheap transportation, has brought them into sharp competition with the older States and with foreign countries.

Many products of American manufacture, previously exported in small quantities, or not at all, now find profitable markets in foreign countries, and some of these products are now exported to countries from which, a few years ago, they were largely imported into the United States.

The importation of merchandise into the United States amounted to \$642,136,210, during the fiscal year ended June 30, 1873. It fell to \$437,051,523 in 1878, and increased to \$445,777,775 in 1879—an increase of \$8,726,252, or of two per cent. as compared with the preceding year. The importation of railroad-bars declined from 531,537 tons in 1872, to 2,611 tons in 1879. The production of railroad-bars in the United States during the year 1878, amounted to 788,112 tons.

REPORT OF THE SECRETARY OF THE TREASURY.

The total amount of exports and imports of coin and bullion during the last fiscal year, was as follows:

Exports of coin and bullion.....	\$24,997,441
Imports of coin and bullion.....	20,296,000
	<hr/>
Excess of exports over imports.....	4,701,441
	<hr/>

During each year since 1861, the exports of specie have exceeded the imports of specie. The largest excess of such exports over imports was reached during the year 1864, when it amounted to \$92,280,929. Since the year 1875, the excess of exports of specie has rapidly declined, amounting during the year ended June 30, 1878, to only \$3,918,811, and during the fiscal year ended June 30, 1879, to only \$4,701,441.

A marked change has recently taken place in the movement of the precious metals. During the months of July, August, and September of the current fiscal year, the imports of coin and bullion exceeded the exports \$33,125,337, and from the 1st of October to the 15th of November the imports of coin and bullion at the port of New York exceeded the exports at that port \$26,381,584, indicating that from July 1 to November 15 the entire imports of coin and bullion exceeded the exports about sixty million dollars.

This marked change in the movement of coin and bullion was not unexpected. During the last four years the value of our exports of merchandise has exceeded the value of our imports of merchandise \$753,271,475. The excess of exports has heretofore been mainly met by the remittance to this country of American securities, but the time appears to have come when the balance of trade in our favor is to be adjusted by means of the precious metals.

INTERNAL COMMERCE.

The internal commerce of the country, as exhibited by the tonnage transported on railroads, has steadily increased in volume, even during the period of commercial depression of the last six years. This affords an illustration of the recuperative powers of the country, as the commodities transported on railroads are the products of agriculture, of mining, and of manufacturing industries. More than ninety per cent. of the internal commerce of the country is now carried on by means of railroad transportation, and the habits of the producing and commercial classes are becoming more and more conformed to its methods and necessities.

The facilities for direct trade afforded by arrangements entered into

between connecting railroads has greatly extended the trade limits of the seaports and of all interior points.

Similar combinations between railroads and ocean-steamer lines afford extensive privileges for direct foreign trade at all the important interior points of the country. The competition of rival lines for through-traffic has given rise to grave questions touching inter-State commerce. These questions relate chiefly to the matter of discriminations in rates. As purely national questions they demand a careful investigation under the authority of Congress.

CLAIMS.

The need of some legislation for the adjudication of claims which are now within the jurisdiction of this Department, has been called in former reports, to the attention of Congress. Proper methods for investigating claims, such as are used in courts of justice, are not within the power of the Department. A tribunal which may require the best evidence which the nature of the case admits, the cross examination of witnesses instead of *ex parte* statements, a public hearing, and a public record of proceedings, is essential for the proper adjustment of such claims.

Section 1063 of the Revised Statutes contains a provision for sending to the Court of Claims certain disputed cases arising in the Departments. A general provision of law by which all important disputed questions of law or fact might be remitted to that tribunal for trial, would greatly relieve the officers of this Department, and tend to promote the ends of justice. It may be assumed that the method adopted by all courts of justice for ascertaining the truth, best subserve that purpose.

The importance of providing some limitation of time within which claims against the Government shall be prosecuted, or, for want of such prosecution, be forever barred, is again urged upon the attention of Congress.

It may be assumed that any claim in behalf of an individual who is in a situation to present it, will, if well founded, be presented for payment within six years from the time when the claimant's right first accrued. Such limitations form part of the codes of all civilized nations and experience has shown that, as between individuals, less injustice is done by the conclusive presumption that claims, thus delayed beyond a reasonable time, are unfounded or have been adjusted, than by allowing them to be prosecuted after witnesses to the transaction have died or been lost sight of, and other evidence has been destroyed.

The presumption is much stronger in case of a claim against the Government than in one against an individual. The Government is always solvent, and can always be found, and it is difficult to suggest a reason why a valid claim against it should not be presented within the term of six years.

Under the present circumstances, it is impossible to administer equal justice to those who present old claims. The Comptrollers and Commissioner of Customs have by law the final determination of all claims coming within their jurisdiction, and while one of them, or the Auditor who first considers the claim, may reject it, because its prosecution has been for many years delayed, and he therefore believes it to be unfounded, another officer feels it his duty to examine it upon such evidence as may still exist, because Congress has not interposed a statute of limitation in bar of its allowance. The Third Auditor, in his report, has called special attention to the importance of some limitation of this character.

It is recommended, therefore, that it be provided by law that no claim pending in any of the Executive Departments shall be allowed unless presented for payment within six years after such claim first accrued, with the usual exception in favor of those disqualified by age, or otherwise, from presenting the claim within such time.

Legislation of a similar character in favor of those against whom the Government holds claims seems eminently proper. Cases of great hardship arise in which sureties upon bonds of a principal long since dead or insolvent are held liable to pay balances upon accounts, which might, by due diligence, have been enforced against the principal while he was alive or solvent, as the case might be.

A distinction is made in most codes as to the limitation of suits upon simple contracts and upon contracts under seal. It seems, however, but justice to provide that persons liable to the Government, even by contracts under seal, should be discharged from liability after the lapse of six years from the time when such liability has been ascertained and fixed.

As to claims accruing in the ordinary course of current business, the Department is well organized for their investigation, and a decision made as final by the accounting officers, should be regarded as final in all tribunals; and it is believed that all propositions for the re-examination of claims thus adjudicated, either in the Court of Claims or elsewhere, are opposed to the true principles of legislation. It is submitted that the true end of legislation on the subject of claims is, to render their adjustment speedy and final, and to discourage the allowance of old demands, or the re-examination of those already settled.

SPECIAL TRIBUNAL IN NEW YORK FOR TRIAL OF REVENUE CASES.

In the report of this Department for the year 1877, the following paragraph occurs:

“Embarrassments attendant upon the collection of the revenue at the port of New York, alluded to in the report of my immediate predecessor, growing out of the large number of suits brought to recover alleged excess of duties, have not ceased, but a considerable number of such suits have been pressed to trial, with results in favor of the Government in the majority of cases. Owing to the multiplicity of such suits, a considerable delay necessarily occurs before they can be brought to trial; which delay is adverse to the interests both of the Government and the importers. It was then recommended that a special tribunal be created by law, for the trial of customs-revenue cases, at the port of New York.”

The Secretary takes this occasion to state that the importance of this recommendation has been made more apparent by the experience of the last year than ever; and that it would be of much advantage both to the Government and to the importers if it could be adopted.

It is also recommended that, for the purpose of securing a greater uniformity in the collection of duties on imports at the various ports of the United States, the Secretary of the Treasury be authorized, in cases of variance between the appraised value or classification for duty of similar merchandise at two or more ports in the United States, to prescribe regulations under which the board of general appraisers, or a majority of them, shall decide upon the true dutiable value or classification of such imports.

The present force of general appraisers is limited to four, and these have been found inadequate to perform the necessary duties in the appraisal of imports. It is therefore recommended that authority be given for the appointment of three additional general appraisers.

DISTINCTIVE PAPER.

In the last annual report mention was made that proposals for a new paper for printing public securities had been invited. As a result, a paper has been adopted, having for its distinctive features a continuous silken thread and distributed silk fibre of different colors, both of which are incorporated with the pulp in the process of manufacture. As soon as the character of the paper had been determined upon, public advertisement was made for proposals for its manufacture, and the bid of Messrs. Crane & Co., of Dalton, Mass., being the lowest received, was accepted. Under the contract which has been made with that firm the Government pays, including the cost of fibre, 44 cents per pound for the distinctive paper, a reduction of

26 cents per pound as compared with the lowest price heretofore paid, and a saving in the ordinary use of this paper of about \$25,000 per annum; but, in case a larger amount of paper shall hereafter be needed for printing bonds, or for other purposes, the saving would be correspondingly greater.

It is believed that this new paper will protect the public against counterfeiting quite as well as that which has heretofore been in use, while for drafts and checks its use is much preferred. As soon as the supply of old paper is exhausted, which will be about the first of January next, all United States notes, national-bank notes, bonds, and checks of public disbursing officers, will be printed upon the new.

BUREAU OF ENGRAVING AND PRINTING.

The system adopted in the business of engraving and printing notes and securities of the Government has been closely adhered to, and as a result this bureau is upon a thorough business basis. During the past fiscal year an unprecedented amount of work has been executed, approximating ninety per cent. of increase over the year prior, while the increase in the aggregate expenditures has been but fifty-four per cent. It is gratifying to know that while this work was executed at reduced cost, the employes, under the operation of the plan of paying "by the piece," have been receiving better compensation. Those formerly paid \$1 50 a day have been able to earn from \$1 80 to \$1 90 a day of not exceeding six-hours' labor.

It is expected that this work will be removed from the Treasury-Department building to the new building in course of erection by the spring of 1880, when, with increased facilities, it can be consolidated and still more economically managed.

LIGHT-HOUSE ESTABLISHMENT.

The light-house establishment remains in a satisfactory condition. During the fiscal year it has put in operation thirteen new light-houses, seventy-five new river-lights, one new steam fog-signal and one hundred and twelve new buoys, of which last, three are automatic signal-buoys. It has discontinued six lights, which were no longer needed, and changed the characteristics of ten others, so that they will be more useful than heretofore to commerce and navigation.

The board has continued the work of changing the burners of the smaller lights in the several light-house districts, so as to substitute coal-oil for lard-oil as an illuminant, but it has not found it expedient to make the change in lights of the higher orders.

Experiments with the electric light have been continued with such results that the board has now asked for means to put the light to the practical test of a working exhibition in a light-house. The estimate for this purpose is commended to the attention of Congress.

The experiments, as to the penetration of sound through fog, made by the late Professor Henry, have been continued by his successor in the board, Professor Morton, with the results detailed in the appendix to the board's annual report.

COAST AND GEODETIC SURVEY.

The report of the Superintendent for the fiscal year shows the intimate bearing of this work on commerce, navigation, and many requirements in civil life. For river and harbor improvements, light-house service, marine constructions, and for engineering purposes generally, the records of the survey contain precise details pertaining to geographical positions, shore-line, tides and currents, distances and directions, heights and contour of ground, the hydrography of tidal waters, and the magnetic variation in all the States and Territories.

The results of the year include twenty-six hydrographic surveys; additional geodetic operations and topography in fifty-two sites of work; determinations of magnetic variation at forty widely-separated localities; longitude and latitude at others; and special observations on tides and sea-currents. For the mariner, the charts of the survey are marked with compass variations derived from observations directly useful to land-surveyors in the interior.

The survey, having mapped and developed the most important reaches of the Mississippi, is represented by a member in the "Mississippi River Commission" as organized under the act of Congress approved June 28, 1879, to consider expedients for the improvement of that river. All previous commissions of like importance have been constituted in the same way, and it has generally devolved on this branch of the public service to make the needful surveys. Economy in means has been thus secured by the employment of observers in readiness and acquainted with all the details required in connection with questions of improvement.

Geodetic work now in progress along the thirty-ninth parallel is well advanced to the eastward of the Sierra Nevada mountains.

In the course of the year the demand for charts has largely increased. At our seaports sales have more than doubled, and the volumes of the Coast Pilot and printed tide-tables are in steady request. With the annual reports appendices are given on subjects of special interest.

These are constantly called for by intelligent citizens, but the number of volumes printed has, for some years, barely sufficed for distribution to public departments and institutions of learning.

MARINE-HOSPITAL SERVICE.

The Surgeon-General of Marine-Hospital Service reports that 20,922 seamen received relief during the last fiscal year, of whom 11,499 were treated in hospital and 9,423 as dispensary or out-patients; being an increase of 2,699 in the number of patients over last year, and of 4,114 over any year previous to 1878. The amount of hospital-tax received and covered into the Treasury during the year was \$361,409 58, while the total expenditures were \$375,164 01; making a per capita cost of \$17 93, a reduction over 1878 of \$2 11. A continuous reduction has been effected in the cost per capita, from \$38 41 in 1870, when the service was reorganized, down to the present time.

On June 11, 1879, a circular was issued, offering to the owners of such American vessels as might desire them, proper facilities for the physical examination of sailors employed by them. The offer has been received with much favor, and the results already reached are such as to justify the recommendation that such examinations be made compulsory by law, so that no American vessel shall be allowed to proceed to sea until the crew shall have been examined and pronounced physically sound, and able to distinguish the color of signal-lights; and the employés in the cook's and steward's department of vessels carrying passengers, free from disease.

In previous reports to Congress, recommendations have been made by this Department that statutory provision be made for examinations for appointment and promotion in the medical corps of this service, and those recommendations are again renewed. While no person has received an appointment as assistant surgeon without a fair and thorough examination as to his professional qualifications, yet it is believed that such examination should rest on something more than departmental regulations.

No appropriation was made by Congress during the past year whereby active co-operation with local health authorities could be undertaken, and no work of this character has been accomplished except the publication of the "Bulletin of Public Health," forty-six weekly numbers of which have been published from the appropriation for printing for this Department. By the act of June 2, 1879, the duty of condensing and publishing the information received from revenue, consular, and marine-hospital officers and local health authorities was assigned to the National Board of Health.

The need of a marine hospital, for the care of sick and disabled seamen, at the port of New York, has long been recognized, and repeated recommendations have been made to Congress that one of the military hospitals at that port be transferred by law to this Department for such purposes. Within the last year, at the request of this Department, the Hon. Secretary of War has transferred Bedloe's Island, in the harbor of New York, for this purpose, subject to the provisions of the joint resolution, approved March 3, 1877, designating that island as a site for the colossal statue of liberty, and subject also to recall if actually needed for military purposes. The island was immediately occupied, and has been used for marine-hospital purposes since August 1, 1879.

PUBLIC BUILDINGS.

The Supervising Architect reports that, during the past year, work on the public buildings, under control of this Department, has progressed satisfactorily, and that in consequence of the low prices of labor and materials, which have ranged throughout the year, contracts for the various branches of work have been made at rates very advantageous to the Government.

Upon completion of the granite-work for several of the large buildings, reported as nearly finished, one of the largest items of expenditure in the construction of the public buildings will be removed, and it is recommended that liberal appropriations be made for prosecuting the work on such buildings during the ensuing fiscal year. The estimates submitted are believed to be sufficient for the diligent prosecution of the work.

Attention is particularly called to that portion of the report in which reference is made to the need of a building constructed expressly for the preservation of the records and files belonging to this Department. There is unquestionable need of such a structure, and it is recommended that early and ample provision be made therefor by Congress.

LIFE-SAVING SERVICE.

The results of the operations of this service during the past year, as shown by the report of the General Superintendent, are highly satisfactory.

The number of reported disasters to vessels during the past year, is two hundred and eighteen. This number is larger than that of any preceding year since the organization of the service, partly because the extension of the service has involved the inclusion of disasters

REPORT OF THE SECRETARY OF THE

upon coasts thus brought within its purview, and additional casualties have been caused by gales of exceptional violence.

There were on board these vessels two thousand five persons. Of these two thousand and forty-seven were saved, and fifty-eight lost.

The number of shipwrecked persons cared for at three hundred and seventy-one, to whom one thousand four days of succor were afforded.

The total value of property involved in these disasters of which \$1,445,051 was saved, and \$1,442,800 lost.

Of the twenty-three new stations remaining to be erected this year, under the provision of law, seven have been finished, and six (upon the Gulf coast) are approaching completion, and the remaining ten will be erected as soon as possible. The stations upon the lakes have received additions and improvements which render them much more serviceable.

The beneficial results of the act of June 18, 1878, appear in the improvement in the personnel of the service. The higher credit accorded by the law to the keepers, and the general prestige conferred upon the establishment, appear to have attracted to it a higher average of ability and character. The examination of that of the whole number of keepers and crews, ten hundred and sixteen persons all told, it was found necessary, during the past year, to replace only seventeen by men better qualified.

This fostering legislation, whose general effect has been to improve the service in public regard, as well as to increase its power and usefulness, has also largely turned the attention of the inventors of the country to the production of improved plans and devices for saving life. So many of these have been received that it has been deemed advisable, alike in justice to the inventors and the service, to refer all such inventions to two boards of experts for their examination, under the supervision of the General Superintendent. One of these boards has cognate with the service, and whatever pertains thereto, its members are efficient in the theory and practice of life-saving gunnery. The other board has charge of inventions relating to all other life-saving apparatus and appliances for use at life-saving stations.

REVENUE MARINE.

The following exhibit of the services performed by the vessels of the Revenue Marine during the fiscal year ended June 30, 1879, shows

attainment of better results than have been achieved in any former year:

Aggregate number miles cruised.....	252,112
Number of vessels boarded and examined.....	32,853
Number of vessels seized or reported for violating the law..	3,444
Number of vessels wrecked or in distress, assisted.....	210
Number of persons rescued from drowning.....	123

The estimated value of vessels assisted by revenue vessels, with their cargoes, was \$3,547,073 80. In addition to the foregoing, important assistance was rendered by the revenue vessels to many other branches of the public service.

The expenses of maintaining the service for the last fiscal year were \$844,527 25.

The cadet system for the Revenue Marine, provided by Congress in 1876, has produced satisfactory results. The selection of the cadets upon competitive examination secures young men of superior qualifications, while the plan of conducting all their instruction on shipboard especially fits them for the service in which they are to engage. In June last, six of these cadets, after serving the probationary term of two years as required by law, were advanced to the grade of third lieutenant.

It was stated in the last annual report that some of the older vessels of this service, which would soon need extensive repairs, were provided with machinery of old types, and were expensive in the consumption of fuel, and the suggestion was made that in the interest of economy they should be replaced with new vessels of improved design. It is recommended that appropriate legislation be had at this session of Congress, providing for at least two new steamers for service on the Atlantic and Gulf coasts.

The revenue-steamer "Rush" cruised from about May 1 to October 1 among the islands of the Aleutian Archipelago, to protect the seal-fisheries and sea-otter hunting-grounds, and for the general enforcement of law in Alaska. The commanding officer, under instructions from this Department, made careful observations during his cruise upon the commerce of those waters, the numbers and condition of the population, the resources and natural history of the country, and the tides, currents, &c. The report of the cruise shows that the presence of a revenue-vessel in the waters named is necessary to stop illicit traffic in fire-arms and rum, and to prevent the extermination of the sea-otters and other animals which furnish sustenance to the natives. The report of the special agent in charge of the sea-

islands also shows the necessity for the services of a revenue-cutter in Alaskan waters. The recommendation contained in the last annual report that provision be made for the construction of a vessel specially designed for that service, is renewed.

NATIONAL BOARD OF HEALTH.

Section 3 of the act of March 3, 1879, establishing a National Board of Health, provides that such board shall report to Congress, at its next session, a full statement of its transactions, together with a plan for a national public-health organization. By section 4 of the act of June 2, 1879, entitled "An act to prevent the introduction of contagious and infectious diseases into the United States," said board is required to make to the Secretary of the Treasury an annual report of its operations, for transmission to Congress, with such recommendations as he may deem important to the public interests. By section 8 of the same act, it is provided that the sum of \$500,000, or so much thereof as may be necessary, thereby appropriated, shall be disbursed under the direction of the Secretary of the Treasury, on estimates made by the National Board of Health, to be approved by him; and that said board shall, as often as quarterly, make a full statement of its operations and expenditures under said act to the Secretary of the Treasury, who shall report them to Congress.

While the Secretary has been disposed to meet the requisitions made by the board, in the liberal spirit which inspired the action of Congress in its establishment, the general provisions of law impose upon the accounting officers the responsibility of deciding whether or not the sums disbursed by the board are within the provisions of law making the appropriations.

The board has submitted to the Secretary its report for the quarter ended September 30, which is herewith transmitted. By this report, it appears that the expenditures under the act of March 3, 1879, which appropriated \$50,000, amount to \$18,896 41, leaving a balance of that appropriation of \$31,103 59. The expenditures under the act of June 2, 1879, amount to \$51,810 26, and the estimated amounts for the payment of September accounts to \$30,000, leaving a balance of the appropriation made by said act, available for future operations, of \$418,189 74.

By the act of April 18, 1879, the Secretary of the Treasury was authorized to contract for the purchase or construction of such steam-vessel and refrigerating-machinery, or to arrange with the Navy Department for the use of such vessel as might be recommended by the National Board of Health, to disinfect vessels arriving from ports sus-

pected of infection with yellow-fever or other contagious disease, and for that purpose the sum of \$200,000, or so much thereof as might be necessary, was appropriated.

The reasons why such a vessel has not been constructed fully appear in a letter from the Secretary of the Treasury of June 25, 1879, in answer to Senate resolution of June 23, 1879, to be found in Executive Document No. 33, Senate, Forty-sixth Congress.

No action has been taken in this Department with reference to the subject since said letter, with the accompanying documents, was transmitted to the Senate. The failure hitherto to enter upon the construction of the ship in question is the less to be regretted because, by the admission of all parties, it was too late, when the subject was presented to the Department for action, to complete the construction of the vessel and its machinery for effective use during the season when yellow-fever might be expected to prevail. The whole matter can now be considered by Congress with the deliberation which so important a matter deserves, and practically no time will be lost if the construction of such ship is promptly ordered.

STEAMBOAT INSPECTION.

During the past year 4,289 steam-vessels have been inspected, of an aggregate tonnage of 1,018,109.08 tons, and licenses have been issued to 15,212 officers, an increase over last year of 152 vessels, of 677.05 tons, and of 723 licensed officers.

The total receipts from the inspection of vessels and licensing of officers were \$270,405 57, and the total disbursements for salaries and travelling and other expenses were \$210,434 34, leaving a surplus of receipts over expenditures of \$59,971 23.

ALASKA.

The statement was made in the report of last year that the condition of affairs in Alaska demanded the establishment of some form of government competent to restrain disorder, and insure the safety of the inhabitants. Events since that time, have rendered it a matter of urgent necessity that some form of civil government for the Territory of Alaska be established by Congress. Last spring an outbreak seemed imminent between the whites and Indians at Sitka, and had such outbreak occurred, it would, no doubt, have resulted in great loss of life. The white inhabitants, however, foreseeing the danger, communicated with the commander of the British man-of-war "Osprey," then stationed at Esquimalt, and upon receipt of the communication

the vessel started at once for Sitka, arriving there on the first of March. The time for the outbreak had been fixed for the day following the arrival of that vessel, and her timely arrival prevented the calamity that would otherwise have followed. She remained there for sometime, and until relieved by a United States revenue-cutter, and it has been found necessary to keep a cutter in and around Sitka for much of the time since, to prevent the possibility of such an outbreak. At least three murders, however, have occurred during the past year in the neighborhood of Sitka, of Indians by Indians. The laws now in force require that the trial of such offences shall be had in the district courts of California, Oregon, or Washington Territory. This does not seem adequate to the occasion, involving as it does the transportation of the accused and witnesses a long distance, and a trial remote from the locality where the offence was committed.

A form of bill to establish a government for the Territory of Alaska has been prepared in this Department, and will be submitted to Congress, with proper explanations. It is recommended that earnest consideration be given to the measures therein suggested.

The reports from the Seal Islands show continued good health and prosperity among the inhabitants. The maximum number of one hundred thousand fur-seal skins allowed by law has been taken by the Alaska Commercial Company during the past season; and the taxes thereon, with the rental of \$55,000 for the islands, have been paid by said company to the Government, as they became due.

DISTRICT OF COLUMBIA.

The net expenditures on account of the District of Columbia for the fiscal year 1879, were \$3,597,516 41. The revenues of the District deposited in the Treasury for same period were \$1,741,461 16.

Since July 1, 1878, at which date, under section 7. of the act of June 11, 1878, the offices of the commissioners of the sinking-fund of the District of Columbia were abolished and their duties and powers transferred to the Treasurer of the United States, the bonded debt of the District has been reduced in the sum of \$418,326 67, and the total annual interest charge thereon reduced \$30,154 11.

In view of the fact that a sinking-fund for the final redemption of the three-sixty-five loan of the District was provided at the last session of Congress by permanent annual appropriation, it is recommended that a permanent annual appropriation for interest upon that loan and for interest and sinking-fund for the old funded debt of the District, including the water-stock bonds, be made. The annual amount required

for this purpose is estimated at \$1,088,352 75, which will meet the interest on the entire bonded debt of the District, and provide for the redemption of the old bonded debt by the maturity of the three-sixty-five loan.

The existing provision of law requiring investment of the appropriation for the sinking-fund of the three-sixty-five loan in bonds of that loan seems to work to disadvantage, while District bonds bearing a higher rate of interest are from time to time maturing. Recommendation is therefore made that authority be given for the investment of any money appropriated for the sinking-funds in question in any bonds of the District of Columbia.

PUBLIC SERVICE.

The Secretary acknowledges his obligations to the several officers of bureaus and divisions of the Department for the ability, skill, and industry manifested by them in the discharge of their important and complicated duties. In this report he refers only to the leading operations of the Department, and those only in general terms; but refers for details to the statements and reports herewith transmitted.

The organization of the several bureaus is such, and the system of accounting so perfect, that the financial transactions of the Government during the past two years, aggregating \$3,354,345,040 53, have been adjusted without question, with the exception of a few small balances now in the process of collection, of which it is believed the Government will eventually lose less than \$13,000, or less than four mills on each \$1,000 of the amount involved.

JOHN SHERMAN,
Secretary.

Hon. SAMUEL J. RANDALL,
Speaker of the House of Representatives.

TABLES ACCOMPANYING THE REPORT.

TABLE A.—Statement of the net receipts (by warrants) during the fiscal year ended June 30, 1879.

CUSTOMS.		
Quarter ended September 30, 1878.....	\$38,868,268 10	
Quarter ended December 31, 1878.....	29,833,340 25	
Quarter ended March 31, 1879.....	34,508,909 25	
Quarter ended June 30, 1879.....	34,039,530 10	
		\$137,250,047 70
SALES OF PUBLIC LANDS.		
Quarter ended September 30, 1878.....	260,765 63	
Quarter ended December 31, 1878.....	311,959 67	
Quarter ended March 31, 1879.....	206,210 13	
Quarter ended June 30, 1879.....	145,845 63	
		924,781 06
INTERNAL REVENUE.		
Quarter ended September 30, 1878.....	28,572,144 46	
Quarter ended December 31, 1878.....	29,068,525 50	
Quarter ended March 31, 1879.....	22,923,186 30	
Quarter ended June 30, 1879.....	32,997,754 32	
		113,561,610 58
TAX ON CIRCULATION, DEPOSITS, ETC., OF NATIONAL BANKS.		
Quarter ended September 30, 1878.....	3,368,519 03	
Quarter ended December 31, 1878.....	6,938 26	
Quarter ended March 31, 1879.....	3,337,076 32	
Quarter ended June 30, 1879.....	34,968 71	
		6,747,500 32
REPAYMENT OF INTEREST BY PACIFIC RAILROAD COMPANIES.		
Quarter ended September 30, 1878.....	397,737 10	
Quarter ended December 31, 1878.....	291,921 36	
Quarter ended March 31, 1879.....	126,541 98	
Quarter ended June 30, 1879.....	1,891,000 59	
		2,707,201 03
CUSTOMS, FEES, FINES, PENALTIES, AND FORFEITURES.		
Quarter ended September 30, 1878.....	244,833 93	
Quarter ended December 31, 1878.....	340,576 33	
Quarter ended March 31, 1879.....	253,275 80	
Quarter ended June 30, 1879.....	262,185 60	
		1,100,871 66
FEES, CONSULAR, LETTERS PATENT, AND LAND.		
Quarter ended September 30, 1878.....	508,890 76	
Quarter ended December 31, 1878.....	503,489 22	
Quarter ended March 31, 1879.....	485,794 48	
Quarter ended June 30, 1879.....	637,677 33	
		2,136,051 79
PROCEEDS OF SALES OF GOVERNMENT PROPERTY.		
Quarter ended September 30, 1878.....	41,127 51	
Quarter ended December 31, 1878.....	28,513 81	
Quarter ended March 31, 1879.....	67,925 15	
Quarter ended June 30, 1879.....	43,562 34	
		181,128 81
PROFITS ON COINAGE.		
Quarter ended September 30, 1878.....	71,968 31	
Quarter ended December 31, 1878.....	902,659 67	
Quarter ended March 31, 1879.....	777,927 29	
Quarter ended June 30, 1879.....	1,172,383 40	
		2,924,938 67
REVENUES OF DISTRICT OF COLUMBIA.		
Quarter ended September 30, 1878.....	313,275 42	
Quarter ended December 31, 1878.....	926,961 96	
Quarter ended March 31, 1879.....	171,570 47	
Quarter ended June 30, 1879.....	329,653 31	
		1,741,461 16
MISCELLANEOUS.		
Quarter ended September 30, 1878.....	752,193 18	
Quarter ended December 31, 1878.....	844,247 89	
Quarter ended March 31, 1879.....	578,692 61	
Quarter ended June 30, 1879.....	879,314 75	
		3,054,648 43
Total ordinary receipts, exclusive of loans and premium.....		272,330,241 21
Premium on loans.....		1,496,943 25
Excess of net receipts from loans over redemptions.....		93,361,833 84
Total net receipts.....		367,189,018 30
Balance in Treasury June 30, 1878.....		258,489,808 97
Grand total.....		625,678,827 27

TABLE B.—Statement of the net disbursements (by warrants) during the fiscal year ended June 30, 1879.

CIVIL.	
Congress.....	\$5,232,621 71
Executive.....	6,082,769 88
Judiciary.....	3,697,898 87
Government of Territories.....	205,816 08
Subtreasuries.....	329,900 82
Public land offices.....	509,150 17
Inspection of steam-vessels.....	210,434 34
Mint and assay-offices.....	171,405 30
Total civil.....	\$16,439,997 17
FOREIGN INTERCOURSE.	
Diplomatic salaries.....	318,146 52
Consular salaries.....	462,870 02
Contingencies of consulates.....	119,681 51
Relief and protection of American seamen.....	42,174 01
Rescuing American seamen from shipwreck.....	3,106 55
American and Spanish Claims Commission.....	8,741 00
Contingent expenses foreign missions.....	81,390 19
International Bi-Metallic Commission.....	37,067 99
Tribunal of Arbitration at Geneva.....	1,000 00
Prisons for American convicts.....	13,051 71
International Exhibition at Paris.....	50,027 31
International Bureau of Weights and Measures.....	13,123 81
Expenses under the neutrality act.....	660 65
International Penitentiary Congress at Stockholm.....	2,005 22
Awards under convention between the United States and Peru.....	1,025 06
Awards under convention between the United States and Mexico.....	150,397 35
Contingent and miscellaneous.....	29,358 23
Award to Great Britain by the Fisheries Commission.....	5,500,000 00
Total foreign intercourse.....	6,833,836 12
MISCELLANEOUS.	
Mint Establishment.....	1,035,849 77
Coast Survey.....	602,901 15
Light-House Establishment.....	1,462,459 37
Building and repairs of light-houses.....	876,975 22
Refunding excess of deposits for unascertained duties.....	1,924,246 31
Revenue-cutter service.....	844,527 25
Building revenue cutters.....	5,697 22
Life-saving service.....	501,965 62
Custom-houses, court-houses, post-offices, &c.....	3,120,000 50
Furniture, fuel, &c., for public buildings under Treasury Department..	580,925 16
Repairs and preservation of buildings under Treasury Department....	183,478 49
Collecting customs revenue.....	5,485,543 87
Debenture and drawbacks under customs laws.....	4,931,133 23
Marine-Hospital Establishment.....	374,950 50
Compensation in lieu of moieties.....	42,109 51
Assessing and collecting internal revenue.....	3,528,118 31
Punishing violations of internal-revenue laws.....	97,496 64
Internal-revenue stamps, papers, and dies.....	414,252 12
Refunding duties erroneously or illegally collected.....	242,347 38
Internal-revenue allowances and drawbacks.....	57,487 04
Redemption of internal-revenue stamps.....	20,674 99
Deficiencies of revenue of Post-Office Department.....	5,281,588 02
Return of proceeds of captured and abandoned property.....	68,148 55
Expenses of national loan, salaries.....	197,504 91
Expenses refunding national debt.....	1,915,975 11
Expenses national currency.....	130,769 16
Suppressing counterfeiting and fraud.....	98,863 87
Contingent expenses Independent Treasury.....	45,034 54
Public buildings and grounds in Washington.....	345,360 78
Annual repairs of the Capitol.....	68,500 00
Improving and lighting Capitol grounds.....	112,249 69
State, War, and Navy Departments building.....	975,100 00
Columbian Institute for Deaf and Dumb.....	56,000 00
Government Hospital for the Insane.....	186,500 00
Charitable institutions in Washington.....	45,312 93
Support and treatment of transient paupers.....	15,000 00
Survey of public lands.....	415,885 26
Repayment for lands erroneously sold.....	26,621 81
Five per cent. funds, &c., to States.....	45,300 02
Payments under relief acts.....	56,274 23
Southern Claims Commission.....	42,029 97
Reissuing of national currency.....	261,193 92
Postage.....	384,084 22
Expenses of District of Columbia.....	3,254,801 68
Expenses of Bureau of Engraving and Printing.....	81,595 56
Purchase and management of Louisville and Portland Canal.....	23,970 00

TABLE B.—Statement of the net disbursements (by warrants), &c.—Continued.

Vaults, safes, and locks for public buildings.....	\$29,016 12	
Smithsonian Institution.....	68,560 00	
Indemnity for swamp lands.....	21,001 59	
International exhibition.....	3,300 10	
Department of Agriculture.....	123,979 33	
Propagation, &c., of food-fishes.....	69,815 00	
Collecting statistics relating to commerce.....	10,840 52	
Patent Office.....	101,765 59	
Geological survey of Territories.....	104,605 64	
Deposits by individuals for surveys of public lands.....	84,785 57	
Defending suits and claims for seizure of contraband and abandoned property.....	24,524 24	
Sinking-fund of Pacific railroads.....	328,078 21	
Completion of Washington Monument.....	50,983 07	
Education of the blind.....	250,000 00	
Purchase of relics of George Washington.....	12,000 00	
Purchase of Congressional Globe building.....	100,000 00	
Transportation of United States securities.....	36,300 08	
National Board of Health.....	35,001 50	
Redemption of District of Columbia securities.....	342,714 73	
Legal representatives of Joseph Henry.....	11,000 00	
Refunding taxes to Cumberland Valley Railroad Company.....	85,341 52	
Expenses of eighth and tenth census.....	4,036 46	
Statistical map and atlas of the United States.....	13,400 00	
Improvement of Yellowstone National Park.....	10,000 00	
Miscellaneous.....	128,722 04	
Total miscellaneous.....		\$42,467,722 19
INTERIOR DEPARTMENT.		
Indians.....	\$5,206,109 08	
Pensions (including \$5,373,000 arrears of pensions).....	85,121,482 39	
Total Interior Department.....		40,327,591 47
MILITARY ESTABLISHMENT.		
Pay Department.....	12,164,797 23	
Commissary Department.....	1,962,844 98	
Quartermaster's Department.....	12,524,483 67	
Medical Department.....	388,653 60	
Ordnance Department.....	1,115,100 31	
Military Academy.....	81,658 50	
Improving rivers and harbors.....	8,241,212 44	
Survey of Territories west of the one hundredth meridian.....	56,000 00	
Contingencies.....	47,609 27	
Expenses of recruiting.....	66,177 19	
Signal Service.....	360,210 80	
Expenses of military convicts.....	13,174 19	
Reimbursing States for raising volunteers.....	198,889 36	
Publishing the official records of the rebellion.....	45,998 98	
Support of National Home for Disabled Volunteers.....	880,000 00	
Support of Soldiers' Home.....	109,853 56	
Horses and other property lost in service.....	112,693 25	
Payments under relief acts.....	56,534 47	
Claims for quartermasters' and commissary stores.....	279,998 18	
Construction of military posts.....	199,998 50	
Claims of loyal citizens.....	720,998 32	
Fortifications.....	290,520 75	
Miscellaneous.....	508,235 18	
Total military establishment.....		40,425,600 78
NAVAL ESTABLISHMENT.		
Pay and contingencies of the Navy.....	8,029,535 39	
Marine Corps.....	852,610 00	
Navigation.....	300,679 43	
Ordnance.....	267,265 70	
Equipment and Recruiting.....	946,617 94	
Yards and Docks.....	827,795 49	
Medicine and Surgery.....	141,066 83	
Provisions and Clothing.....	830,058 32	
Construction and Repair.....	1,997,229 29	
Steam-Engineering.....	1,037,907 28	
Miscellaneous.....	53,851 85	
	15,344,618 21	
Less excess of repayments.....	219,491 37	
Total Naval Establishment.....		15,125,126 84
Interest on the public debt.....		105,327,949 00
Total net ordinary expenditures.....		206,947,833 53
Balance in Treasury June 30, 1879.....		358,730,943 74
Total.....		625,678,827 27

TABLE C.—Statement of the issue and redemption of loans and Treasury notes (by warrants) for the fiscal year ended June 30, 1879.

Character of loans.	Issues.	Redemptions.	Excess of issues.	Excess of redemptions.
Treasury notes 1857, act of December 23, 1857		\$100 00		\$100 00
Loan of 1858, act of June 14, 1858.		220,000 00		220,000 00
Seven-thirties of 1861, act of July 17, 1861.		200 00		200 00
Old demand notes, acts of July 17, and August 5, 1861, and July 12, 1862.		827 50		827 50
Five-twenties of 1862, act of February 25, 1862		28,300 00		28,300 00
Legal-tender notes, acts of February 25, 1862, July 11, 1862, and January 7 and March 3, 1863.	\$64,107,833 00	64,107,833 00		
Certificates of indebtedness, acts of March 1 and May 17, 1862, and March 3, 1863.		1,000 00		1,000 00
Fractional currency, acts of July 17, 1862, March 3, 1863, and June 30, 1864		705,158 66		705,158 66
One year notes of 1863, act of March 3, 1863		2,850 00		2,850 00
Two year notes of 1863, act of March 3, 1863		1,450 00		1,450 00
Coin certificates, act of March 3, 1863.	12,317,400 00	41,270,700 00		28,953,300 00
Compound interest notes, acts of March 3, 1863, and June 30, 1864		15,590 00		15,590 00
Ten-forties of 1864, act of March 3, 1864		56,141,150 00		56,141,150 00
Seven-thirties of 1864 and 1865, acts of June 30, 1864, and March 3, 1865.		9,600 00		9,600 00
Five-twenties of June 1864, act of June 30, 1864.		26,500 00		26,500 00
Five-twenties of 1865, act of March 3, 1865		200,550 00		200,550 00
Consols of 1865, act of March 3, 1865		109,225,400 00		109,225,400 00
Consols of 1867, act of March 3, 1865		269,391,900 00		269,391,900 00
Consols of 1868, act of March 3, 1865		17,361,750 00		17,361,750 00
Certificates of deposit, act of June 8, 1873	89,340,000 00	105,725,000 00		16,385,000 00
Silver certificates, act of February 28, 1878.	9,464,400 00	8,460,050 00	\$1,004,350 00	
Refunding certificates, act of February 26, 1879	39,398,110 00	26,549,900 00	12,848,210 00	
Funded loan of 1891, acts of July 14, 1870, July 20, 1871, and January 14, 1875	10,000,000 00		10,000,000 00	
Funded loan of 1907, acts of July 14, 1870, July 20, 1871, and January 14, 1875	568,179,900 00		568,179,900 00	
Total	792,807,643 00	699,445,809 16	592,032,460 00	498,670,626 16
Excess of issues			592,032,460 00	
Excess of redemptions			498,670,626 16	
Net excess of issues charged in receipts and expenditures.			93,361,833 84	

REPORT OF THE SECRETARY OF THE TREASURY.

TABLE D.—Statement of the net receipts and disbursements (by warrants) for the quarter ended September 30, 1879.

RECEIPTS.		
Customs		\$44,083,491
Sales of public lands		117,383
Internal revenue		29,409,691
Tax on circulation, deposits, &c., of national banks		3,360,569
Repayment of interest by Pacific Railway Companies		252,427
Customs fees, fines, penalties, and forfeitures		239,579
Consular, letters-patent, homestead, and land fees		506,864
Proceeds of sales of government property		55,965
Profits on coinage		469,486
Miscellaneous		1,348,198
Total net ordinary receipts		79,843,663
Balance in Treasury June 30, 1879		358,780,943
Total		438,574,607
DISBURSEMENTS.		
Customs		4,132,678
Internal revenue		981,682
Diplomatic service		314,335
Judiciary		560,003
Interior (civil)		1,154,687
Treasury proper		6,064,480
Quarterly salaries		121,626
Total civil and miscellaneous		13,829,492
Indians		2,048,748
Pensions (including \$16,374,249.60 arrears of pensions)		27,266,991
Military establishment		12,104,897
Naval establishment		4,196,569
Interest on public debt		32,736,685
Total net ordinary disbursements		91,683,385
Redemptions of the public debt		110,087,482
Balance in the Treasury September 30, 1879		236,803,789
Total		438,574,607

TABLE E.—*Statement of outstanding principal of the public debt of the United States on the 1st of January of each year from 1791 to 1843, inclusive, and on the 1st of July of each year from 1844 to 1879, inclusive.*

Year.	Amount.
Jan. 1, 1791	\$75,463,476 52
1792	77,227,924 66
1793	80,352,034 04
1794	78,427,404 77
1795	80,747,587 39
1796	83,762,172 07
1797	82,064,479 33
1798	79,228,529 12
1799	78,408,669 77
1800	82,976,294 35
1801	83,038,050 80
1802	80,712,632 25
1803	77,054,686 30
1804	86,427,120 88
1805	82,312,150 50
1806	75,723,270 66
1807	69,218,398 64
1808	65,196,317 97
1809	57,023,192 09
1810	53,173,217 52
1811	48,005,587 76
1812	45,209,737 90
1813	52,962,827 57
1814	81,487,846 24
1815	99,833,060 15
1816	127,334,933 74
1817	123,491,905 16
1818	103,466,633 83
1819	95,529,648 28
1820	91,015,566 15
1821	89,987,427 66
1822	93,546,676 98
1823	90,875,877 28
1824	90,269,777 77
1825	83,788,432 71
1826	81,054,059 99
1827	73,987,357 20
1828	67,475,043 87
1829	58,421,413 67
1830	48,565,406 50
1831	39,123,191 68
1832	24,322,235 18
1833	7,001,698 83
1834	4,760,082 08
1835	37,733 05
1836	37,513 05
1837	836,957 83
1838	3,308,124 07
1839	10,434,221 14
1840	3,573,343 82
1841	5,250,875 54
1842	13,594,480 73
1843	20,601,226 28
July 1, 1843	32,742,922 00
1844	23,401,652 50
1845	15,925,303 01
1846	15,550,202 97
1847	38,826,534 77
1848	47,044,862 23
1849	63,061,858 69
1850	63,452,773 55
1851	68,304,796 02
1852	66,199,841 71
1853	59,803,117 70
1854	42,242,222 42
1855	35,586,956 56
1856	31,972,537 90
1857	23,699,831 85
1858	44,911,881 03
1859	58,496,837 88
1860	64,842,287 88
1861	90,580,873 72
1862	524,176,412 13
1863	1,119,772,138 63
1864	1,815,784,370 57
1865	2,680,647,869 74
1866	2,773,236,173 09
1867	2,678,126,103 87
1868	2,611,687,851 19

REPORT OF THE SECRETARY O

TABLE E.—Statement of outstanding principal of t

Year.
July 1, 1869.....
1870.....
1871.....
1872.....
1873.....
1874.....
1875.....
1876.....
1877.....
1878.....
1879.....

* In the amount here stated as the outstanding principal of
ates of deposit outstanding on the 30th of June, issued u
\$31,730,000, in 1873; \$58,760,000, in 1874; \$58,415,000, in 1875;
\$46,755,000, in 1878, and \$30,370,000 in 1879, for which a like amo
deposit in the Treasury for their redemption, and added to t
certificates, as a matter of accounts, are treated as a part of t
held on deposit for their redemption, should properly be deduct
in making comparison with former years.

Statement of the principal of the public debt, including
the Treasury, on the 1st day of July of each year,
compiled from the published monthly debt-statements o

Years.	Outstanding prin- cipal.	Accrued in- terest.
July 1, 1869.....	*\$2, 597, 722, 983 37	\$47, 447, 331
1870.....	*2, 601, 675, 127 83	50, 607, 731
1871.....	2, 353, 211, 332 32	45, 036, 730
1872.....	2, 253, 251, 328 78	41, 705, 831
1873.....	2, 234, 482, 903 20	42, 356, 631
1874.....	2, 251, 690, 468 43	38, 939, 631
1875.....	2, 232, 284, 521 95	38, 647, 531
1876.....	2, 180, 395, 067 15	38, 514, 931
1877.....	2, 205, 301, 392 10	40, 882, 731
1878.....	2, 256, 205, 892 53	36, 404, 631
1879.....	2 349, 567, 482 04	30, 792, 631

* It will be noticed that there is a difference in the amounts
the principal of the debt July 1, 1869, and July 1, 1870. This
cipal of the debt as shown by the monthly debt-statements of
sinking-fund and paid for from money in the Treasury, were in
and were also treated in the cash as a cash item, or asset, for t
authority of law for deducting them from the outstanding del
act of July 14, 1870, directed that these bonds should be cance
amount of each class of the outstanding debt to which they re
were accordingly made on the books of the department and in

PAPERS

ACCOMPANYING

REPORT OF THE SECRETARY OF THE TREASURY.

REPORT OF THE COMMISSIONER OF INTERNAL REVENUE.

TREASURY DEPARTMENT,
OFFICE OF INTERNAL REVENUE,
Washington, November 24, 1879.

SIR: I have the honor to submit the report of the Bureau of Internal Revenue, for the fiscal year ended June 30, 1879, accompanied by additional facts and figures bringing down the operations of this branch of the public service as nearly as possible to the present date.

It affords me great pleasure to be able to report an improved condition of the internal-revenue service: first, in regard to the receipts; second, in respect to the character and efficiency of the officers employed; third, in respect to the disposition of tax-payers to observe the laws; and, fourth, in regard to public opinion in reference to the enforcement of the laws. The marked improvement in the receipts during the past four months in the face of the great reduction of the tax on tobacco, gives promise that the receipts from internal-revenue taxes will, during the present fiscal year, reach the sum of \$115,000,000.

The one hundred and twenty-six collectors and their subordinates, as a body of officers to whom is intrusted the duty of collecting nearly \$115,000,000 of revenue, are entitled to the respect and commendation of the people and the government for their capacity, integrity, and fidelity to duty.

The great majority of the tax-payers have observed the laws, and faithfully paid their taxes, and it is believed that in the greater portion of the country violations of the internal-revenue laws are as infrequent as can reasonably be expected. And in those districts where the laws have been for years openly violated, and the officers set at defiance, there is a returning sense in the minds of a majority of the people of the duty of the tax-payers to observe the laws and of the officers of the government to enforce them.

RESISTANCE TO ENFORCEMENT OF THE LAWS.

It will be seen from the table on page 14, that during the last three years and four months 3,117 illicit distilleries have been seized, 6,431 persons arrested for illicit distilling, and 26 officers and employes killed and 47 wounded while engaged in enforcing the internal-revenue laws. These facts clearly show the dangerous and difficult character of the work that has been performed by our officers in the enforcement of the laws; and the fact that during the past sixteen months 1,395 illicit distilleries have been seized, 3,281 illicit distillers arrested, 4 officers and employes killed and 22 wounded while enforcing the laws, and the further fact that nearly all of these seizures, arrests, and resistance of authority are con-

fined to the districts long infested with these troubles, indicates unmistakably that much remains to be done to place the service upon a satisfactory footing. This can only be done by constant, vigorous, and courageous efforts of repression with such a force of deputies, armed when necessary, as will demonstrate the ability and determination of the government to collect its revenues and enforce its laws. And I deem it my duty to again call your attention to the fact that the appropriations have been, and now are, inadequate to the proper enforcement of the laws.

It is well known that the manufacture of whisky with small stills has been long practiced by many persons in a number of States. A tax of 90 cents a gallon on this product is a great temptation to fraud.. It has been found that in many portions of the country, especially in mountainous regions, distillers will league together for the purpose of avoiding the payment of the tax and resisting the officers of the United States engaged in the enforcement of the laws.

In making the distribution of the appropriation to collectors and their subordinates for the collection of the revenue and for policing all the States and Territories of the Union for the purpose of preventing and detecting frauds, it is found necessary, as a rule, to assign large areas of territory to each deputy collector, the size of the division being mainly determined by the number of manufacturers and dealers engaged in the production and sale of taxable articles. In the great majority of these divisions the deputy collectors perform their duties without molestation or resistance, so that in numerous cases as many as five or ten counties are assigned to a single deputy collector. In those collection-districts where illicit distilling is rife, experience has shown that the combinations of these violators of the law have for years been such as to set the ordinary force of officers at defiance, so that three years ago many experienced and intelligent officers had come to the conclusion that the fraud of illicit distilling was an evil too firmly established to be uprooted, and that it must be endured. The efforts of the past three years, although begun and continued with insufficient appropriations, have given such results as to show conclusively that, with a proper appropriation for this service, these frauds can be eradicated and resistance to the laws overborne.

The appropriations being insufficient to employ permanently the proper number of deputies for operations against illicit distillers, I have from time to time authorized collectors to employ a temporary force to aid the regular deputies in policing their divisions and seizing illicit distilleries, and it has been found necessary to provide many collectors with guns from the Ordnance Department of the government to enable them to arm their deputies for self-defense. It has been through the organization of these parties that collectors have been enabled to seize so many illicit distilleries, and to overcome the resistance which has on so many occasions been offered by combinations of illicit distillers.

It is in the interest of the government, whose laws are violated and whose revenues are withheld; it is in the interest of the public, whose peace is disturbed and whose morals are debauched; and it is in the interest of the officers of internal revenue, whose lives are endangered while enforcing the laws, that sufficient appropriations should be made to provide an ample force to suppress illicit distilling wherever found, and to police the infected country so as to prevent a recurrence of these demoralizing frauds, and I therefore have the honor to recommend the appropriation of \$100,000 as a deficiency, for the present fiscal year for this service.

I have directed the collectors in these infected districts to encourage the establishment of legal distilleries as an additional means of eradicating the evil of illicit distilling. This has been found to work well, 255 distilleries having been established in illicit distilling districts during the past fiscal year. This course has worked a material change with the public at large and with persons in the habit of distilling favorable to the observance of law, and if suitable appropriations are made to allow the employment of a sufficient number of deputy collectors to make thorough and frequent canvass of the districts, I am satisfied that within a year or two frauds against the revenue will be to a great extent broken up, and an orderly and peaceable administration of the laws established. The increase in the number of legal distilleries will materially augment the expense for storekeepers and gaugers, and will make it necessary that a deficiency appropriation be made for the present fiscal year of two hundred thousand dollars.

LEGISLATION FOR PROTECTION OF REVENUE OFFICERS.

I again call attention to the fact that in very few cases have the State courts taken cognizance of the murders and assaults committed upon the persons of the officers and employés of the government.

The penalties provided by law for murder and assault to murder are intended, amongst other things, for the protection of the citizen in life and limb. When, in a particular class of cases, the laws are rarely enforced, it is evident that they fall short of accomplishing one of their important purposes. This is obviously the case in respect to officers of the United States engaged in the enforcement of the internal-revenue laws. It is clear to my mind that in some portions of the country, for a considerable time to come, reliance cannot be placed upon the State courts for punishing citizens who commit murder or assaults to murder upon our officers while engaged in the performance of their duties. It seems to me of the utmost importance that the United States should, under its own laws and through its own courts, undertake the trial and punishment of persons who are guilty of murder and assault to murder of officers while engaged in or on account of the performance of their official duties, and I have the honor of renewing the recommendation made in my last annual report for the passage of such a law by Congress.

TAX UPON CIRCULATING NOTES OF CORPORATIONS AND INDIVIDUALS.

During the past two years assessments amounting to \$193,743.53 have been made against various corporations and individuals upon circulating notes issued in derogation of sections 3412 and 3413 U. S. Revised Statutes, and sections 19 and 20 of the act of February 8, 1875. There seems to be a growing disposition in many parts of the country upon the part of individuals and corporations to issue notes to be used as a local circulation, payable either in money or trade. Experience has shown that such issues are a "delusive and pernicious substitute for cash." The laws in question seem to be the only protection the people have against a flood of these insecure and dangerous notes, and in my opinion they should not be repealed.

PUBLICATIONS.

Since my last annual report I have caused to be prepared and printed a compilation of the internal-revenue laws and other statutes connected

therewith, which has been distributed for the use of United States judges, district attorneys, marshals, and officers of internal revenue. It is believed to be an accurate reproduction of the living law up to and including the acts of the last session of Congress, and I have no doubt will be of great public value. I am indebted mainly to the services of W. H. Armstrong, esq., and C. W. Eldridge, of the internal-revenue service, for the production of this work. I have also caused to be prepared and printed since my last annual report a revision of the Revenue Agents' Manual, which has been considerably enlarged. The former volume was so well received by the service that this volume has been printed in sufficient quantities to supply all the officers of internal revenue, and has been entitled the Internal Revenue Manual. I am indebted to Revenue Agent F. D. Sewall and C. W. Eldridge, esq., mainly for the preparation of this work.

DEFICIENCY TAXES UPON SPIRITS WITHDRAWN FOR EXPORTATION.

Under the existing law spirits intended for exportation are gauged before their withdrawal from the bonded warehouse, and are again gauged at the port of export when they are about to be laden upon a foreign-bound vessel, and the distiller or exporter is required to pay a tax of 90 cents per gallon upon any deficiency that may be found between the first and second gauges. These taxes are greatly complained of by the distillers and others engaged in the export trade. This law was undoubtedly designed for, and has had the effect of, preventing frauds in connection with the exportation of distilled spirits. It is, however, well known that it is next to impossible to so prepare wooden packages as to prevent a certain amount of evaporation in the course of transportation over a long line, especially in hot weather, and I fully recognize the hardship of requiring the distiller to pay tax upon spirits which have been lost by evaporation in the course of transportation.

The intent of the internal-revenue laws is to levy a tax of 90 cents a gallon upon spirits which are manufactured for and actually go into consumption in this country, and the tax in question is evidently not intended for revenue, but as a restrictive measure to prevent fraud.

These taxes have in many instances amounted to a reasonable profit on the sale of the spirits, and have therefore been felt as a great burden by the distillers. Where the spirits are withdrawn in good faith for exportation, and due diligence is exercised in their transportation, and losses occur by evaporation or accident in transportation without fraud or negligence on the part of the distiller, owner, or transportation company, or their agents, in my judgment no tax should be levied for any such loss. Such a tax necessarily discourages the exportation of American distilled spirits, and would seem to be contrary to sound public policy; and I have the honor to recommend that existing laws be so amended as to provide that taxes shall not be assessed for deficiencies occurring under the circumstances named. I would also recommend that provision of law be made for the exportation of alcohol in metallic cans of ten gallons and upwards.

BONDED WAREHOUSES, FOR PEACH AND APPLE BRANDY.

Distillers of brandy from grapes were, by the act of March 3, 1877, allowed to store their product for three years in bonded warehouse before payment of tax thereon; and I suggest for the consideration of Congress the expediency of according the same privilege to distillers of brandy from apples and peaches.

The latter is now the only class of distillers not having the option of three years' storage of their product before payment of tax, and the reasons for granting them the privilege are the same which induced its extension in the case of grain and grape-brandy distillers, and are such as operate with especial force in the case of all distillers of fruit.

The necessity for time to ripen the spirits sufficiently to give them a value remunerative to the producer, and for opportunity to obtain a favorable market is really more urgent than with grain distillers.

Under authority of the statute in that respect, I have already enlarged the time for the collection of this tax, in default of payment, to four months from the date when the same is payable; but I have not deemed it best to give further credit without the custody of the spirits as security.

The extension of the warehouse system to this class of distillers would occasion a considerable increase in the annual appropriation for pay of storekeepers; but some compensation for this outlay may, perhaps, be found in an increase in production when production no longer requires an immediate raising of money to meet the tax or else a sale of the product at unsatisfactory prices.

RECEIPTS FOR FIRST FOUR MONTHS OF PRESENT FISCAL YEAR.

The following table shows the receipts from the several sources of revenue for the first four months of the current fiscal year. The receipts for the corresponding period in the last fiscal year and a comparison of the receipts for the two periods are also given:

Sources of revenue.	Receipts from July 1, 1878, to October 31, 1878.	Receipts from July 1, 1879, to October 31, 1879.	Increase.	Decrease.
SPIRITS.				
Brandy distilled from apples, peaches, or grapes	\$257,034 56	\$269,975 05	\$12,940 49	.....
Spirits distilled from materials other than apples, peaches, or grapes	15,621,150 41	18,242,981 09	2,621,830 68	.....
Wine made in imitation of champagne, &c.	15,950 08	12,012 53	.....	\$3,937 55
Rectifiers (special tax)	345,582 50	343,021 18	.....	2,561 32
Dealers, retail liquor (special tax)	86,830 92	27,720 58	.....	8,610 34
Dealers, wholesale liquor (special tax) ...	1,050 43	1,235 02	184 59	.....
Manufacturers of stills, and stills or worms manufactured (special tax)	1,050 43	1,235 02	184 59	.....
Stamps for distilled spirits intended for export	3,815 90	3,942 20	126 30	.....
Stamps—warehouse, rectifiers', and dealers	84,184 30	100,792 30	16,608 00	.....
Interest on tax upon spirits	12,485 70	51,721 54	39,235 84	.....
Total	16,377,584 80	19,053,401 49	2,675,816 69	.....
TOBACCO.				
Cigars, cheroots, and cigarettes	4,482,744 67	4,984,850 65	502,105 98	.....
Manufacturers of cigars (special tax)	9,956 57	7,854 24	.....	2,102 33
Snuff	391,771 04	235,307 26	.....	156,463 78
Tobacco of all descriptions	10,002,970 71	7,822,835 09	.....	2,180,135 62
Stamps for tobacco or snuff intended for export	2,932 30	2,081 30	.....	851 00
Dealers in leaf tobacco (special tax)	7,829 44	5,346 96	.....	2,482 48
Retail dealers in leaf tobacco (special tax)	1,003 60	520 83	.....	482 77
Dealers in manufactured tobacco (special tax)	152,617 63	166,388 52	13,770 84	.....
Manufacturers of tobacco (special tax) ..	700 88	704 63	3 75	.....
Peddlers of tobacco (special tax)	4,663 24	4,114 34	.....	548 90
Total	15,057,190 13	13,230,003 82	.....	1,827,186 31

REPORT OF THE SECRETARY OF

PRODUCTION OF SPIRITS DURING

The quantity of spirits, 71,892,621 gallons, distillery warehouses during the fiscal year greater than the quantity produced during an approximation to this product was that of the which was 71,337,099 gallons.

The production of the fiscal year 1870 was fell to 54,576,446 gallons in 1871, and it might product of the year 1880 would fall below this considered that 14,837,581 gallons of spirits year 1879, and that the foreign demand is in that the large product for the early portion of during the year.

As compared with the fiscal year 1878, the fiscal year 1879 is 15,789,568 gallons. This increase the different varieties known to the trade, except

Increased production of—

Bourbon whisky	-----
Rye whisky	-----
Alcohol	-----
Rum	-----
Gin	-----
Pure, neutral, or cologne spirits	-----
Miscellaneous	-----

Total increase	-----
Decrease in highwines	-----

Net increase

PRODUCTION AND MOVEMENT OF SPIRITS DURING
MONTHS OF THE PRESENT FISCAL

The following table shows the production and spirits during four months of the present fiscal foreign demand of last year is steadily maintained is 2,749,148 gallons greater than for the corresponding and the withdrawals 2,958,950 gallons greater last year. If the business of these four months the balance of the fiscal year, the production millions of gallons, and the amount of tax received and three-quarters millions of dollars.

Months.	Produced.	Withdrawn for export.
	Gallons.	Gallons.
July, 1879	4,506,116	583,574
August, 1879	4,750,549	675,581
September, 1879	5,783,380	934,621
October, 1879	6,735,703	1,015,354
Total	21,795,748	3,209,110

Increase over 1878.

July	-----
August	-----
September	-----
October	-----
Total	-----

SPIRITS AND TOBACCO REMOVED IN BOND FOR EXPORT.

The following statement shows the quantity and percentage of production of distilled spirits and manufactured tobacco (including snuff) removed in bond for export during each fiscal year since the passage of the act of June 6, 1872:

Year.	Distilled spirits.		Year.	Manufactured tobacco.	
	Taxable (proof) gallons ex-ported.	Percent-age of produc-tion.		Pounds of to-bacco ex-ported.	Percent-age of produc-tion.
1873.....	2, 358, 630	3. 45+	1873.....	10, 110, 045	8. 50+
1874.....	4, 060, 160	5. 90+	1874.....	10, 800, 927	9. 11+
1875.....	587, 413	0. 96+	1875.....	9, 179, 316	7. 13+
1876.....	1, 308, 900	2. 25+	1876.....	9, 434, 485	7. 87+
1877.....	2, 529, 528	4. 22+	1877.....	11, 335, 046	8. 88+
1878.....	5, 499, 252	9. 80+	1878.....	10, 581, 744	8. 89+
1879.....	14, 837, 581	20. 63+	1879.....	11, 034, 951	8. 62+
Total.....	31, 181, 464	.....	Total.....	72, 476, 514	.....

SPIRITS WITHDRAWN FOR EXPORT DURING FIRST FOUR MONTHS OF PRESENT FISCAL YEAR.

Statement, by districts, of the quantity in taxable gallons, and different kind of spirits, withdrawn for export during the four months ended November 1, 1879.

Districts.	Alcohol.	Rum.
	Gallons.	Gallons.
1 Illinois	513, 097	.....
3 Illinois	128, 505	.....
5 Illinois	1, 436, 534	.....
8 Illinois	214, 380	.....
1 Indiana	25, 913	.....
7 Indiana	394, 839	.....
3 Massachusetts.....	.....	84, 06
5 Massachusetts.....	.....	369, 84
Nebraska.....	20, 134	.....
1 Ohio.....	17, 436,	.....
1 Wisconsin	4, 404,	.....
Total.....	2, 755, 242	453, 90

REPORT OF THE SECRETARY OF THE

7

SPIRITS WITHDRAWN FOR EXPORT DURING FIRST

LAST THREE FISCAL YEARS.

Statement, by districts, of the quantity, in taxable gallons drawn for export during the four months ended November 1, 1878, and November 1, 1879.

Districts.	1877.
	Gallons
1 Illinois.....	165, 37
3 Illinois.....	43, 04
5 Illinois.....	218, 47
8 Illinois.....	
1 Indiana.....	
4 Indiana.....	6, 35
7 Indiana.....	
5 Kentucky.....	
6 Kentucky.....	1, 05
7 Kentucky.....	
8 Kentucky.....	
3 Maryland.....	7, 68
3 Massachusetts.....	26, 25
5 Massachusetts.....	289, 36
1 Missouri.....	
Nebraska.....	5, 98
1 New York.....	
1 Ohio.....	21, 49
5 Ohio.....	2, 47
1 Wisconsin.....	
Total.....	787, 47

EXPORTATION OF DISTILLED SPIRITS

The following figures show the increase or decrease in kinds of spirits exported in the year 1879 as compared with 1878:

Increase in alcohol.....	
Increase in rum.....	
Increase in Bourbon whisky.....	
Increase in pure, neutral, or cologne spirits.....	
Increase in miscellaneous.....	
Total increase.....	
Decrease in rye whisky.....	
Decrease in corn whisky.....	
Decrease in highwines.....	
Total decrease.....	
Net increase.....	

The bulk of the spirits exported in both fiscal years was alcohol produced in the northern part of Illinois, bound vessels at New York, and consigned to Marseilles, and in the fiscal year 1878 alcohol was exported to thirty-three ports in Africa. The total number of ports to which were exported during the fiscal year 1878 was thirty; the fiscal year 1879 the number was increased to six respectively, in North America, South America, Europe, Australia, and the islands of the Atlantic, Pacific,

The exportation of spirits having nearly trebled in amount during the year 1879 as compared with the year 1878, it is apparent that the increase in such exportations has kept pace with that of other American products. As the principal increased demand for American spirits has been in those foreign ports in which they are best known, and as they have, during the years 1878 and 1879, become known in all parts of the world, it is anticipated that the exportations of such spirits during the current fiscal year will be still greater than those made during the fiscal year ended June 30, 1879.

During the year 1878, 5,748 gallons of high wines were withdrawn for exportation; in 1879 none were withdrawn for this purpose. In 1878 no pure, neutral, or cologne spirits were withdrawn for exportation, while in 1879 the quantity of such spirits withdrawn for such purpose was 37,685 gallons. Almost the entire increase, 9,354,989 gallons, in the quantity of spirits exported in 1879 consisted of those varieties which had been subjected to the several processes of distilling, redistilling, purifying, and refining before being deposited in the distillery warehouse. (See preceding tabular statement, showing the different kinds of spirits as known to the trade produced, withdrawn for various purposes during the year and in warehouse at the beginning and close of the year.) Additional facilities for maintaining and perfecting the security afforded by the lien on the spirits and by the warehousing bonds have also been provided by legislation during the year. Upon the recommendation of this office the following provisions were inserted in the internal-revenue act of March 1, 1879:

A new bond shall be required in case of the death, insolvency, or removal of either of the sureties, and may be required in any other contingency affecting its validity or impairing its efficiency, at the discretion of the Commissioner of Internal Revenue. And in case the distiller or owner fails or refuses to give the bond hereinbefore required, or to renew the same, or neglects to immediately withdraw the spirits and pay the tax thereon, or if he neglects to withdraw any bonded spirits and pay the tax thereon before the expiration of the time limited in the bond, the collector shall proceed to collect the tax by distraint, issuing his warrant of distraint for the amount of tax found to be due, as ascertained by him from the report of the ganger if no bond was given, or from the terms of the bond if a bond was given. But this provision shall not exclude any other remedy or proceeding provided by law.

If it shall appear at any time that there has been a loss of distilled spirits from any cask or other package hereafter deposited in a distillery warehouse, other than the loss provided for in section three thousand two hundred and twenty-one of the Revised Statutes of the United States, which, in the opinion of the Commissioner of Internal Revenue, is excessive, he may instruct the collector of the district in which the loss has occurred, to require the withdrawal from warehouse of such spirits, and to collect the tax accrued upon the original quantity of distilled spirits entered into the warehouse in such cask or package, together with the interest accrued thereon, if any, notwithstanding that the time specified in any bond given for the withdrawal of the spirits entered into warehouse in such cask or package has not expired. If the said tax and interest are not paid on demand, the collector shall report the amount due upon his next monthly list, and it shall be assessed and collected as other taxes are assessed and collected.

SPIRITS WITHDRAWN FROM DISTILLERY WAREHOUSES ON PAYMENT OF THE TAX.

	Gallons
In 1878	49,571, 1
In 1879	51,885, 9
Increase	<u>2,314, 8</u>

REPORT OF THE SECRETARY OF

This increase is distributed among the trade, except the kinds known as "highwine"

Bourbon whisky	-	-	-
Rye whisky	-	-	-
Alcohol	-	-	-
Rum	-	-	-
Pure, neutral, or cologne spirits	-	-	-
Miscellaneous	-	-	-
Total increase	-	-	-
Decrease in withdrawals of—			
Gin	-	-	-
Highwines	-	-	-
Total decrease	-	-	-
Net increase in withdrawals tax-paid	-	-	-

The amount of interest-tax collected during the period to three years was \$74,899.48. March 28, 1878, the year ended June 30, 1878, the year during which the act has been in force for the year indicate that a revenue of about \$100,000 per annum will be derived from this source. In my mind, however, as indicating that the annual amount collected may be greater, that no three-year-old spirits have been withdrawn, the oldest spirits at any time in the year being the product of the month of March, 1878, the stock of old spirits in warehouse July 1, 1878, during the year following, the quantity of such spirits old in warehouse July 1, 1879, exceeded the quantity of such spirits in warehouse July 1, 1878, very nearly two and July 1, 1879, 5,717,916 gallons.

The quantity of each month's product in which was withdrawn during the year ended July 1, 1879, the following tabular statement:

Product of the month of—	In warehouse July 1, 1878.
1877.	
March	Gallons. 700, 3
April	1, 095, 9
May	1, 154, 0
June	747, 0
July	274, 8
August	127, 8
September	133, 8
October	142, 0
November	314, 0
December	097, 7
1878.	
January	1, 230, 5
February	1, 114, 1
March	1, 540, 7
April	1, 704, 4
May	1, 052, 8
June	1, 850, 0
Total	14, 088, 773

The exportation of spirits having nearly trebled in amount during the year 1879 as compared with the year 1878, it is apparent that the increase in such exportations has kept pace with that of other American products. As the principal increased demand for American spirits has been in those foreign ports in which they are best known, and as they have, during the years 1878 and 1879, become known in all parts of the world, it is anticipated that the exportations of such spirits during the current fiscal year will be still greater than those made during the fiscal year ended June 30, 1879.

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	Gallons
In 1878	49,571, 1
In 1879	51,835, 9
Increase	<u>2,314, 8</u>

REPORT OF THE SECRETARY OF

This increase is distributed among the sev
trade, except the kinds known as "highwines"

Bourbon whisky
Rye whisky
Alcohol
Sum
Pure, neutral, or cologne spirits
Miscellaneous

Total increase

Decrease in withdrawals of—

Gin
Highwines

Total decrease

Net increase in withdrawals tax-paid

The amount of interest-tax collected during
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Product of the month of—	In warehouse July 1, 1878.
1877.	Gallons.
March	700, 3
April	1,095, 3
May	1,154, 6
June	747, 6
July	274, 8
August	127, 8
September	135, 8
October	142, 0
November	314, 6
December	697, 7
1878.	
January	1,280, 5
February	1,114, 1
March	1,640, 7
April	1,704, 4
May	1,652, 9
June	1,350, 0
Total	14,088,773

TRANSFERS OF SPIRITS TO MANUFACTURING WAREHOUSES.

Section 20 of the internal revenue act of March 1, 1879, provides "that under such regulations and requirements as to stamps, bonds, and other security as shall be prescribed by the Commissioner of Internal Revenue, any manufacturer of perfumery, medicines, or preparations for export, manufacturing the same in a duly constituted manufacturing warehouse, shall be authorized to withdraw, in original packages from any distillery warehouse, so much alcohol as he may require for the said purpose, without the payment of the internal-revenue tax thereon."

The manufacturing warehouses to which alcohol may be transferred under the provision of the above-quoted section are those established under authority conferred by section 3433 of the Revised Statutes for the manufacture of perfumery, medicines, or preparations for export free of tax or duty. The quantity of alcohol removed after the passage of the act and before the end of the fiscal year 1879 was 13,213 gallons. Several large lots have already been transferred to these warehouses during the current year, and it is evident that hereafter the alcohol used in such warehouses will be of American manufacture, and not, as heretofore, of foreign production. If the law were so amended as to allow the withdrawal without the payment of tax of all kinds of spirits to be used in such manufacturing warehouses for all purposes authorized by law, a large export demand would spring up for cordials and other mixed liquors produced in such manufacturing warehouses.

The quantity of alcohol transferred to manufacturing warehouse during four months ended November 1, 1879, was as follows:

	Gallons.
From 5 Illinois	69,938
From 1 Missouri	4,286
Total	74,224

SPIRITS WITHDRAWN FROM WAREHOUSE FOR SCIENTIFIC PURPOSES,
AND FOR THE USE OF THE UNITED STATES.

The quantity of alcohol withdrawn free of tax from distillery warehouses for the use of colleges and other institutions of learning in the preservation of specimens of natural history in their several museums, or for use in their chemical laboratories, and of spirits of various kinds for the use of the United States, amounted during the year to 17,686 gallons. The spirits withdrawn for the use of the United States were mainly upon requisitions made by the Surgeon-General of the Army and by the Secretary of the American Fish Commission.

SPIRITS LOST BY CASUALTY DURING THE YEAR.

The quantity of spirits in distillery warehouses at the beginning of the year was 14,088,773 gallons, and the quantity deposited during the year was 71,892,621 gallons, making a total of 85,981,394 gallons which was on deposit therein during the year. Of this quantity, 14,505 gallons—less than one-fiftieth of 1 per cent.—was lost by casualty; that is to say, only one gallon of each 5,928 gallons was so lost. The credit of having preserved this immense quantity of highly inflammable property almost intact, is due alike to the distiller and to the internal-revenue storekeeper, as the distillery warehouses in which it is stored are in their joint custody.

During the early part of the calendar year 1877 a special examination of all distillery warehouses was made, and such examinations have been made during the years 1878 and 1879. It is noted in this connection, that the annual losses by casualty have been much less than during the years immediately preceding. These losses during the years 1875-'76-'77-'78-'79, are shown in the following table:

	Gallons.
1875	156,877
1876	100,855
1877	2,984
1878	7,307
1879	14,505

The quantity of spirits lost by casualty on which the tax was abated during the year under the provisions of sections 3221, 3222, and 3223 of the Revised Statutes was 7,374 gallons.

These sections of the law were amended by sections 3 and 6 of the act of March 1, 1879, section 3221 being amended so as to extend its provisions to spirits thereafter destroyed by accidental fire or other casualty, without any fraud, collusion, or negligence of the owner thereof after the time when the spirits should have been drawn off by the gauger and placed in the distillery warehouse; and section 3223 being amended so as to provide that when the owners of distilled spirits, in the cases provided for by sections 3221 and 3222, may be indemnified against the tax by a valid claim of insurance for a sum greater than the actual value of the spirits before and without the tax being paid, the tax shall not be remitted to the extent of such insurance.

SPIRITS REMAINING IN WAREHOUSE AT THE CLOSE OF THE YEAR.

The quantity—19,212,470 gallons—of spirits remaining in distillery warehouses June 30, 1879, was greater than the quantity in warehouse June 30, 1878, by 5,123,697 gallons, and, in fact, exceeded the quantity in warehouse at the close of any preceding fiscal year, the quantity so remaining at the close of each year during which spirits have been stored in such warehouses being as follows:

	Gallons.
Quantity remaining June 30, 1869	16,685,166
Quantity remaining June 30, 1870	11,671,886
Quantity remaining June 30, 1871	6,744,360
Quantity remaining June 30, 1872	10,103,392
Quantity remaining June 30, 1873	14,650,148
Quantity remaining June 30, 1874	15,575,224
Quantity remaining June 30, 1875	13,179,596
Quantity remaining June 30, 1876	12,595,850
Quantity remaining June 30, 1877	13,091,773
Quantity remaining June 30, 1878	14,088,773
Quantity remaining June 30, 1879	19,212,470

Certain facts operating as causes of this great increase, and indicating a growing ability on the part of distillers to discharge their obligations to the government, are (1) the great increase in number of legally authorized distilleries in sections of the country very recently infested by illicit distillers, (2) the building of large and expensive distilleries in other sections, (3) the increased production of the finer grades of goods involving the introduction into the distilleries of expensive machinery for redistilling, purifying, and refining the products formerly deposited in

the warehouse in the crude state, (4) the increased foreign demand, and (5) the returning prosperity of the country.

As illustrations, the following facts are cited: In the sixth district of North Carolina the number of distillery warehouses increased from 53 July 1, 1878, to 184 June 30, 1879. In the fifth district of Illinois the largest distillery in the United States (probably in the world) was built during the year and put in operation July 21, 1879. During the fiscal year 1879, as compared with the year 1878, there was a falling off in the production and withdrawals of high wines, and an increase in production and withdrawal of certain other spirits involving greater expense in production as follows: A decrease in the production of high wines of 1,379,333 gallons and an increase in the production of all other varieties amounting in the aggregate to 17,168,901 gallons, a decrease of 2,511,898 gallons in the withdrawals of high wines on payment of tax, and an increase of 2,152,130 gallons in the withdrawals of pure neutral or cologne spirits on payment of the tax.

More than four-fifths of the spirits remaining in warehouse June 30, 1879 (16,080,757 gallons out of 19,212,470 gallons), were Bourbon and rye whiskies, and the increase in the quantity in warehouse on that day over that in warehouse June 30, 1878, was mainly due to the increase in these two varieties. There was an increase, however, in all the different kinds of spirits except gin, as follows:

	Gallons.
Increased quantity of bourbon whisky in warehouse	2,549,803
Increased quantity of rye whisky in warehouse	1,904,031
Increased quantity of alcohol in warehouse	60,756
Increased quantity of rum in warehouse	53,284
Increased quantity of high wines in warehouse	88,617
Increased quantity of pure, neutral, or cologne spirits in warehouse	84,883
Increased quantity of miscellaneous whisky in warehouse	397,087
Total increase	5,138,491
Decreased quantity of gin in warehouse	14,794
Net increase of spirits in warehouse	5,123,697

FERMENTED LIQUORS.

The receipts from fermented liquors for the fiscal years ended June 30, 1878 and 1879, are shown in the following statement:

Sources.	Receipts for fiscal year ended June 30—		Increase.	Decrease.
	1878.	1879.		
Fermented liquors, tax of \$1 per barrel on	\$9,473,360 70	\$10,270,352 83	\$796,992 13	
Brewers' special tax	212,802 77	202,779 61		\$10,023 16
Dealers in malt liquors', special tax	250,888 31	256,187 64	5,299 33	
Total	9,937,051 78	10,729,320 08	792,268 30	

The tax of \$1 per barrel on fermented liquors is paid by stamps. A deduction of 7½ per cent. being allowed by law on all sales of such stamps, the quantities of fermented liquors on which tax was paid for the two years were, therefore, as follows: In 1878, 10,241,471 barrels; in 1879, 11,103,084 barrels; there being an increase of 861,613 barrels, or 8 per cent.

It will be observed that there is a steady increase in the consumption of malt liquors in this country. It is an interesting fact that the foreign demand for American malt liquors is rapidly increasing. Applications for drawbacks have been applied for upon exports made to the following-named foreign ports during the fiscal year 1878-'79, viz: St. John (Porto Rico), Halifax, La Guayra, Vera Cruz, Callao, St. Thomas, Honolulu, Maranham (Brazil), Valparaiso, Hayti, Havana, Montevideo, Trinidad, Santos (Brazil), Port Spain (Trinidad), Aspinwall, Aux Cayes (Hayti).

The exportation of fermented liquors is now made with benefit of a drawback. In my opinion it would be proper to make provision of law for the exportation of this article in bond.

TOBACCO.

The total amount of collections from tobacco in all its forms, including the internal-revenue tax upon imported tobacco, snuff, and cigars, and the special taxes paid by manufacturers of and dealers in leaf and manufactured tobacco, for the fiscal year ended June 30, 1879, was forty million one hundred and thirty-five thousand and two dollars and sixty-five cents (\$40,135,002.65). As compared with the total receipts from the same source for the preceding fiscal year, this shows an increase of forty-three thousand two hundred and forty-seven dollars and ninety-eight cents (\$43,247.98).

Considering the disturbed condition of the trade for a considerable portion of the year consequent upon the discussion of the tax question by Congress, and the reduced rate of the tax on manufactured tobacco and snuff provided by the act of March 1, 1879, which went into operation on the 1st day of May following, this result is highly satisfactory.

Statements showing the increase and decrease of revenue from each particular source of the tobacco tax for the last fiscal year, as compared with the same source for the preceding year, are given below. It will be seen from this comparison that the loss in revenue from manufactured tobacco, including snuff, resulting from the causes above stated, was made up by the increased collections from cigars, which is found to be nearly 7 per cent.

TOBACCO AND SNUFF.

Manufactured tobacco, at 24 cents a pound.....	\$17,903,510 99
Manufactured tobacco, at 20 cents a pound.....	11 40
Manufactured tobacco, at 16 cents a pound.....	6,740,352 51
Snuff, taxed at 32 cents a pound.....	708,835 56
Snuff, taxed at 16 cents a pound.....	193,299 79
Total for the year ended June 30, 1879.....	25,606,010 25
Total for the year ended June 30, 1878.....	26,383,872 30
Decrease of collections on tobacco and snuff.....	777,862 05
Of this decrease \$616,283.18 was on chewing and smoking tobacco, and \$161,578.87 on snuff.	

CIGARS AND CIGARETTES.

Cigars, taxed at \$6 per thousand.....	\$12, 115, 406 82
Cigars, taxed at \$5 per thousand.....	61 47
Cigarettes, taxed at \$1.75 per thousand.....	416, 984 43
Total collections for the year ended June 30, 1879.....	12, 532, 452 72
Total collections for the year ended June 30, 1878.....	11, 719, 226 39
Increase in collections from cigars and cigarettes.....	813, 226 33

OTHER COLLECTIONS.

Export stamps, year ended June 30, 1879.....	\$7, 863 90
Export stamps, year ended June 30, 1878.....	7, 002 60
Increase in sale of export stamps.....	861 30
Dealers in manufactured tobacco, year ended June 30, 1879.....	1, 705, 720 20
Dealers in manufactured tobacco, year ended June 30, 1878.....	1, 679, 617 60
Increase in collections from dealers in manufactured tobacco.....	26, 102 60
Special taxes, manufacturers of tobacco and cigars in 1879.....	161, 435 23
Special taxes, manufacturers of tobacco and cigars in 1878.....	168, 493 23
Decreased collections, manufactured tobacco and cigars.....	7, 058 00
Special taxes, peddlers of tobacco, year ended June 30, 1879.....	31, 247 63
Special taxes, peddlers of tobacco, year ended June 30, 1878.....	32, 899 30
Decrease in collections from peddlers of tobacco.....	1, 651 67
Dealers in leaf tobacco, year ended June 30, 1879.....	90, 272 72
Dealers in leaf tobacco, year ended June 30, 1878.....	100, 643 25
Decrease in collections from dealers in leaf tobacco.....	10, 370 53

PRODUCTION OF MANUFACTURED TOBACCO, CIGARS, ETC.

Adding to the several quantities of tobacco, snuff, and cigars removed for consumption during the fiscal year ended June 30, 1879, as computed from the amount of revenue derived therefrom, the quantities removed in bond for export, we have the following results, which show the entire production for the last fiscal year:

	Pounds.
Tobacco, taxed at 24 cents per pound	74, 847, 963
Tobacco, taxed at 20 cents per pound	57
Tobacco, taxed at 16 cents per pound	42, 127, 203
Total quantity removed for consumption	116, 975, 223
Tobacco removed in bond for export, at 24 cents	9, 221, 921
Tobacco removed in bond for export, at 16 cents.....	1, 792, 177
Total product of tobacco	127, 989, 321
Snuff, taxed at 32 cents a pound	2, 215, 111
Snuff, taxed at 16 cents a pound.....	1, 208, 124
Snuff removed for consumption	3, 423, 235
Snuff removed in bond for export, at 32 cents.....	20, 853
Total product of snuff	3, 444, 088
Total production of tobacco and snuff for the year ended June 30, 1879..	131, 433, 409
Total production for year ended June 30, 1878.....	119, 406, 528
Increase of production	12, 026, 881

Had the same quantity of manufactured tobacco, removed for consumption, to wit, 116,975,223 pounds, paid the uniform tax of 24 cents a pound, the revenue derived therefrom would have been \$28,074,053.52, or \$3,370,178.71 more than was actually received under the reduced rate; and the receipts from snuff, at the uniform rate of 32 cents a pound, would have been \$1,095,435.20, or \$193,299.85 more than was received, making a total difference of \$3,563,478.56.

PRODUCTION OF CIGARS AND CIGARETTES.

	Numbers.
Cigars, cheroots, &c., taxed at \$6 per thousand	2, 019, 234, 470
Cigars, cheroots, &c., taxed at \$5 per thousand.....	12, 294
Cigarettes, taxed at \$1.75 per thousand	238, 276, 817
Cigars exported.....	3, 031, 500
Cigarettes exported	15, 979, 000
Total product for fiscal year 1879.....	2, 276, 534, 081
Total product for fiscal year 1878.....	2, 082, 356, 362
Increase during fiscal year 1879 of.....	194, 177, 719

IMPORTED CIGARS.

The cigars imported during the fiscal year ended June 30, 1879, as given by the Bureau of Statistics—

	Pounds.
Aggregated in weight.....	619, 280
Of this quantity there were exported.....	70, 282
Leaving to be withdrawn for consumption.....	548, 998
Allowing 13½ pounds to the thousand as the weight of imported cigars, the number of imported cigars included in the above table would be...	40, 666, 518
Number withdrawn in 1878 was.....	42, 001, 000
Decrease during year 1879 was	1, 334, 482

LEAF TOBACCO.

Assuming that for every one hundred pounds of leaf tobacco used in the manufacture of tobacco and snuff, eighty-five pounds of manufactured products have resulted; and that for every one thousand cigars manufactured, twenty-five pounds of leaf tobacco were used; and that for every thousand cigarettes made, five pounds of leaf tobacco were required; the leaf tobacco used during the fiscal year ended June 30, 1879, for manufacturing tobacco, snuff, and cigars, aggregated in pounds as follows:

For manufacturing tobacco and snuff.....	154, 627, 540
For manufacturing cigars and cigarettes	51, 828, 236
Total leaf manufactured	206, 455, 776
Deduct imported leaf used.....	6, 221, 862
Total domestic leaf used.....	200, 233, 914
Leaf exported during fiscal year 1879	322, 279, 540
Total leaf accounted for	522, 513, 454

EXPORTATION OF MANUFACTURED TOBACCO AND SNUFF IN BOND.

The subjoined table shows, as removed and unaccounted for July 1, 1878, and July 1, 1879, the quantity, in pounds, of manufactured tobacco and snuff which had been removed for exportation in bond, and concerning which the proofs of landing at a foreign port had not been furnished prior to the dates named.

1. *Removed and unaccounted for July 1, 1878.*

	Pounds.	Pounds.
Tobacco, at 20 cents tax	85,911.50	
Bonds remaining in hands of district attorneys.....	17,094.00	
Tobacco, at 24 cents, removed under exportation bonds..	4,448,373.75	
Tobacco, at 24 cents, removed under transportation bonds..	534,290.50	
Snuff, at 32 cents, removed under exportation bonds....	5,576.00	
		<u>5,091,245.75</u>

2. *Removed during the year ended June 30, 1879.*

Tobacco, at 24 cents tax	9,215,572.25	
Tobacco, at 24 cents tax (excess)	6,349.00	
Tobacco, at 16 cents tax.....	1,792,177.50	
Snuff, at 32 cents tax.....	20,852.75	
		<u>11,034,951.50</u>
		<u>16,126,197.25</u>

3. *Exported and during the year accounted for.*

Tobacco, at 20 cents tax.....	46,336.50	
Tobacco, at 24 cents tax	10,681,376.50	
Tobacco, at 24 cents tax, paid on deficiencies	1,610.00	
Tobacco, at 16 cents tax	13,527.00	
Snuff, at 32 cents tax.....	21,702.75	
		<u>10,767,552.75</u>

4. *Remaining unaccounted for June 30, 1879.*

Tobacco, at 20 cents tax.....	39,575.00	
Bonds remaining in hands of district attorneys.....	17,094.00	
Tobacco, at 24 cents, removed under exportation bonds..	3,047,262.50	
Tobacco, at 24 cents, removed under transportation bonds..	474,336.50	
Tobacco, at 16 cents, removed under exportation bonds..	1,673,900.00	
Tobacco, at 16 cents, removed under transportation bonds..	104,750.50	
Snuff, at 32 cents, removed under exportation bonds....	1,642.00	
Snuff, at 32 cents, removed under transportation bonds..	84.00	
		<u>5,358,644.50</u>
		<u>16,126,197.25</u>

The quantity removed from manufactories for exportation during the fiscal year ended June 30, 1879, is 453,207.13 pounds more than that removed during the fiscal year ended June 30, 1878.

EXPORTATION OF CIGARS AND CIGARETTES IN BOND.

1. *Removed and unaccounted for July 1, 1878.*

	Numbers.	Numbers.
Cigars, at \$6 per M tax	1,041,050	
Cigarettes, at \$1.75 per M tax.....	2,485,500	
		<u>3,526,550</u>

2. Removed during the year ended *June* 30, 1879.

	Numbers.	Numbers.
Cigars, at \$6 per M tax.....	3,031,500	
Cigarettes, at \$1.75 per M tax.....	15,979,000	
		19,010,500
		22,537,050

3. Exported and accounted for during the year ended *June* 30, 1879.

Cigars, at \$6 per M tax.....	3,050,675	
Tax paid on deficiencies, at \$6 per M tax.....	2,500	
Cigarettes, at \$1.75 per M tax.....	11,280,000	
		14,333,175

4. Remaining unaccounted for *June* 30, 1879.

Cigars, at \$6 per M tax.....	1,019,375	
Cigarettes, at \$1.75 per M tax.....	7,184,500	
		8,203,875
		22,537,050

DATE OF BONDS REMAINING UNACCOUNTED FOR.

The years in which the bonds were given for the exportation of tobacco, snuff, cigars, and cigarettes remaining unaccounted for by evidence of landing, June 30, 1879, are as follows:

Year.	Tobacco.	Snuff.	Cigars.	Cigaret
	Pounds.	Pounds.	Numbers.	Numb
1872.....	17,004			
1873.....	38,075			
1874.....	68,250			
1875.....	100,661			
1876.....	170,474		2,000	
1877.....	1,254,841	466	270,050	
1878.....	3,619,514	1,260	747,325	6
1879.....		1,726	1,019,375	7
Total.....	5,356,018			

THE EXPORTATION OF PROPRIETARY ARTICLES IN BOND

Under the provisions of section 19 of the internal-revenue act of 1, 1879, the privilege enjoyed by manufacturers of friction-match lights, and wax-tapers of exporting their products in bond was extended to the manufacturers of all other articles as enumerated and mentioned in Schedule A, following section 3437 of the Statutes.

The tax on the articles so withdrawn, including friction amounted to \$288,200.56. The tax on the same accounted for during the year was \$278,063.32, leaving a balance unpaid by landing certificates July 1, 1879, of \$10,146.24.

**OPERATIONS AT SPECIAL BONDED WAREHOUSES FOR STORAGE OF
GRAPE BRANDY.**

The following statement shows the quantity of grape brandy placed in special bonded warehouses, withdrawn therefrom, and remaining therein at the beginning and close of the fiscal year ended June 30, 1879, in taxable gallons:

	Gallons.	Gallons.	Gallons
Remaining in warehouse July 1, 1878:			
First district of California	86,810		
Fourth district of California	48,808		
		135,625	
Removed for exportation and unaccounted for July 1, 1878:			
First district of California		383	
			136,008
Produced and bonded during the year:			
Produced and warehoused in first district of California		20,090	
Produced and warehoused in fourth district of California	40,332		
Produced in fourth district and warehoused in first district	8,898		
		40,250	
			69,340
			205,348
Exported and accounted for during the year:			
First district of California		904	
Removed tax-paid during the year:			
First district of California	48,233		
First district of California (deficiencies)	10		
Fourth district of California	47,047		
		95,296	
Removed for export and unaccounted for June 30, 1879:			96,290
First district of California		1,974	
Remaining in warehouses June 30, 1879:			
First district of California	72,561		
Fourth district of California	34,523		
		107,084	
			109,053
			205,348

Of the quantity in warehouse June 30, 1879, 72,561 gallons were in the following-named warehouses located in the first district of California, viz: No. 1, Bode and Danforth, 43,574 gallons; No. 2, Juan Bernard, 19,772 gallons; No. 3, George C. Carlon, 9,215 gallons; and 34,523 gallons were in the following-named warehouses in the fourth district of California, viz: No. 1, George Lichthart, 16,941 gallons; No. 2, John F. Boyce, 4,070 gallons; No. 3, Royal A. Haskins, 8,563 gallons; No. 4, John Tivnen 4,949 gallons.

DRAWBACKS.

Statement of drawback of internal-revenue taxes allowed during the fiscal year 1879 on exported merchandise.

Port of export.	No. of claims.	Proprietary articles.	Distilled spirits.	Tobacco.	Cigars.	Fermented liquors.	Total.
Albany	2	\$108 30					\$108 30
Baltimore	7	119 23		\$1,271 16	\$60 00		1,450 39
Boston	75	8,120 57		271 08			8,391 65
New York	584	30,814 01		6,057 84	79 20	\$263 02	37,215 27
Philadelphia	37	3,219 78		774 12			3,993 90
Rochester	1	15 55					15 55
San Francisco	22	712 80	\$1,426 02	3,739 66	111 00		5,900 38
Saint Louis	12					270 07	270 07
Suspension Bridge	1	15 55					15 55
Troy	3	58 32					58 32
Total	744	43,184 71	1,426 92	12,113 86	250 20	533 69	57,509 38
Allowed, 1878	562	33,820 54	718 90	2,537 98		46 25	37,123 07

* * * * *

REPORT OF THE SECRETARY OF THE

COLLECTIONS ON CAPITAL AND DEPOS

Statement of the amount of taxes collected on the banks and bankers during the fiscal year ended

From the annexed statement it will be seen that \$3,184,980.30 has been realized by the tax on the banks and bankers during the last fiscal year.

States and Territories.	Capital of—	
	Savings-banks.	Other banks and bankers.
Alabama	—	\$5,542
Arizona	—	523
Arkansas	—	1,099
California	\$10,363	125,747
Colorado	73	3,420
Connecticut	—	10,585
Dakota	—	10,370
Delaware	—	3,334
Florida	—	3,304
Georgia	—	18,207
Idaho	—	18,228
Illinois	416	31,244
Indiana	79	24,000
Iowa	77	25,811
Kansas	—	6,177
Kentucky	—	71,344
Louisiana	1,556	9,771
Maine	—	9,141
Maryland	86	19,381
Massachusetts	—	9,631
Michigan	208	16,545
Minnesota	40	10,454
Mississippi	—	4,533
Missouri	—	42,663
Montana	—	2,233
Nebraska	—	2,233
Nevada	—	6,555
New Hampshire	—	—
New Jersey	28	53
New Mexico	—	—
New York	—	150,777
North Carolina	—	2,666
Ohio	49	39,333
Oregon	136	3,333
Pennsylvania	1,436	74,444
Rhode Island	—	16,888
South Carolina	—	3,444
Tennessee	—	8,111
Texas	—	18,222
Utah	—	1,000
Vermont	—	2,000
Virginia	2,268	18,444
Washington	—	1,000
West Virginia	—	7,555
Wisconsin	—	8,555
Wyoming	—	54
Total	16,671.37	\$13,333

ASSESSMENTS.

The following table shows the assessments made by the Commissioner of Internal Revenue during the fiscal years ended June 30, 1878, and June 30, 1879, respectively, and the increase or decrease on each article or occupation:

Article or occupation.	Amount assessed during fiscal year ended—		Fiscal year ended June 30, 1879.	
	June 30, 1878.	June 30, 1879.	Increase over 1878.	Decrease from 1878.
Tax on deficiencies in production of spirits	\$75,583 21	\$63,574 50	.....	\$12,008 71
Tax on excess of materials used in the production of spirits	18,050 73	5,050 27	.....	13,000 46
Tax on deposits, capital, and circulation of banks and bankers	3,488,684 20	3,152,545 26	.....	337,148 94
Tax on distilled spirits seized or fraudulently removed	207,416 14	126,002 14	.....	81,414 00
Tax on fermented liquors removed from brewery unstamped	2,008 41	6,144 33	\$3,535 92	.....
Tax on tobacco, snuff, and cigars removed from factory unstamped	130,431 60	61,017 45	.....	68,514 15
Tax on proprietary articles removed unstamped	4,349 13	2,614 05	.....	1,734 17
Assessed penalties	128,405 70	102,285 73	.....	26,119 96
Legacies and successions	127,189 94	182,036 71	54,846 77	.....
Unassessed and unassessable penalties, interest, taxes previously abated, conscience money, and deficiencies in bonded accounts which have been collected; also fines, penalties, and forfeitures paid to collectors by order of court or by order of Secretary, and amount of penalties and interest received for validating unstamped instruments (Form 53)	270,123 88	401,978 22	31,844 34	.....
Special taxes (licenses)	128,718 83	97,068 91	.....	31,647 92
Tax on incomes and dividends	122,928 54	34,639 54	.....	88,289 00
Total	4,806,508 30	4,235,758 00	.....	570,750 30

The foregoing statement shows a decrease in the assessments for the year ended June 30, 1879, as compared with the previous year, of \$570,750.30. The decrease occurred in taxes on deficiencies in the production of distilled spirits, on excess of materials used in the production of distilled spirits, on distilled spirits seized or fraudulently removed, on tobacco, snuff, and cigars removed unstamped, on proprietary articles removed unstamped, on assessed penalties, on occupations (special taxes), on incomes and dividends, and on deposits, capital, and circulation of banks and bankers.

The decrease in assessments of taxes on deficiencies in the production of distilled spirits and on excess of materials used in the production of spirits indicates a closer observance of the law and regulations in the management of their business by licensed distillers.

These assessments, however, have been materially reduced by the amendment to section 3309 Revised Statutes by the act of March 1, 1879, in reference to unavoidable accidents, and the decision of the Supreme Court of the United States in the case of *Stoll v. Pepper*, fixing the rule by which deficiencies are to be measured.

The decrease in the assessments on spirits, tobacco, snuff, cigars, and proprietary articles removed from the place of manufacture without payment of the tax by stamps indicates a better observance of the law. In respect to illicit distilling, it is proper to state that, owing to the great extent of territory assigned to single officers, and to other circumstances over which this office has had no control, the legal evidence

necessary to identify the distiller and fix the amount of spirits produced has not always been obtainable.

The decrease in the assessments of special taxes and penalties indicates that these taxes are more promptly returned and paid than heretofore.

The decrease in assessments of taxes on incomes and dividends results from the large decrease of taxes of that character remaining uncollected, and to some extent from the unwillingness of taxpayers to waive the statute of limitations.

* * * * * *

I have the honor to be, very respectfully, your obedient servant,
GREEN B. RAUM,
Commissioner.
Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE COMPTROLLER OF THE CURRENCY.

TREASURY DEPARTMENT,
OFFICE OF THE COMPTROLLER OF THE CURRENCY,
Washington, November 26, 1879.

I have the honor to submit for the consideration of Congress, the Seventeenth Annual Report of the Comptroller of the Currency, in compliance with section three hundred and thirty-three of the Revised Statutes of the United States.

The total number of national banks organized, from the establishment of the national-banking system, February 25, 1863, to November 1 of the present year, is 2,438. Of these, 307 have gone into voluntary liquidation by the vote of shareholders owning two-thirds of their respective capitals, and 81 have been placed in the hands of receivers for the purpose of closing up their affairs, leaving 2,050 in operation at the date last named.

Included in the aggregate number organized are ten national gold banks, seven of which, still in operation, are located in the State of California. These banks redeem their circulating-notes in gold coin in the city of San Francisco and at their own counters. They have an aggregate capital of \$4,000,000, and a total circulation of \$1,534,000, but are entitled to receive circulating-notes in amount equal to 80 per cent. of their capital, upon the deposit with the United States Treasurer of the requisite amount of bonds as security therefor. Within the past year one of this class of banks has gone into voluntary liquidation and reorganized as an ordinary national bank, receiving circulating-notes at the rate of 90 per cent. of its capital, and redeeming them at the Treasury Department and at its own counter; and it is probable that the others will also reorganize so soon as the necessary legislative authority shall be obtained to enable them to do so without first going into liquidation.

A bill passed the House of Representatives during a previous session, amending the present law, and authorizing the national gold banks to receive circulating notes in amount equal to 90 per cent. of their capital; and also requiring such banks to keep on deposit, in gold coin, with the Assistant Treasurer of the United States in San Francisco, an amount equal to 5 per cent. of their circulation, instead of keeping 25 per cent. of the same on hand, as is now required by law. The passage

of an act similar in terms, and also of one authorizing the conversion of national gold banks into currency banks, is recommended.

Since my last annual report thirty-eight banks have been organized with an aggregate authorized capital of \$3,595,000, to which \$2,390,440 in circulating-notes have been issued. Thirty-eight banks, with an aggregate capital of \$4,450,000, have voluntarily discontinued business within the same period, and eight banks, having a total capital of \$1,030,000, have failed. The insolvent banks include two, with a capital of \$700,000, which failed after having previously gone into voluntary liquidation.

The following table exhibits the resources and liabilities of the banks on the 2d day of October, 1879, the returns from New York City, from Boston, Philadelphia, and Baltimore, from the other reserve cities, and from the remaining banks of the country being tabulated separately:

	New York City.	Boston, Phila- delphia, and Baltimore.	*Other re- serve cities.	Country banks.	Aggregate.
	47 banks.	99 banks.	82 banks.	1,820 banks.	2,048 banks.
RESOURCES.					
Loans and discounts.....				\$435,154,810	\$875,013,107
On U. S. bonds on demand.....	\$8,286,525	\$2,017,226	\$4,360,523		
On other stocks, bonds, &c., on demand.....	78,062,085	22,605,795	11,445,079		
On single-name paper with- out other security.....	22,491,326	13,136,911	7,150,239		
All other loans.....	87,011,366	118,267,128	65,023,494		
Overdrafts.....	125,073	86,341	349,810	2,928,766	3,489,990
Bonds for circulation.....	25,745,500	53,147,300	25,650,800	232,709,700	387,313,300
Bonds for deposits.....	4,671,650	550,000	3,404,500	9,578,500	18,204,650
U. S. bonds on hand.....	10,140,900	9,066,250	5,953,000	27,806,450	52,966,600
Other stocks and bonds.....	8,843,712	3,704,614	2,634,916	24,464,174	39,647,416
Due from reserve agents.....		19,190,543	16,530,117	71,302,887	107,023,547
Due from other national banks	10,957,673	10,012,482	6,284,310	19,438,529	46,692,904
Due from other banks and bankers.....	2,245,184	992,478	3,339,131	7,053,979	13,630,772
Real estate, furniture and fix- tures.....	9,883,679	7,005,672	4,539,515	26,368,304	47,817,170
Current expenses.....	953,465	732,041	714,102	3,711,648	6,111,256
Premiums.....	827,972	683,149	334,362	2,486,937	4,322,420
Checks and other cash items.....	1,969,600	972,523	888,807	7,473,143	11,306,133
Exchanges for clearing-house.....	93,487,352	14,781,348	4,606,265		112,064,965
Bills of other national banks.....	1,467,887	2,524,131	1,845,771	10,869,761	16,707,550
Fractional currency.....	55,672	35,023	53,965	251,405	396,065
Specie.....	19,349,868	6,979,727	4,369,176	11,474,961	42,173,732
Legal-tender notes.....	19,738,584	8,203,515	11,526,789	20,637,808	69,196,696
U. S. certificates of deposit.....	12,900,000	9,560,000	3,575,000	735,000	26,770,000
Five per cent. redemption fund.....	1,131,721	2,371,148	1,093,277	11,184,569	15,782,715
Due from U. S. Treasurer.....	492,650	81,501	88,256	583,963	1,246,370
Totals.....	420,840,104	306,796,846	185,873,204	955,277,294	1,868,787,448
LIABILITIES.					
Capital stock.....	50,750,000	77,556,200	37,795,500	287,965,605	454,067,365
Surplus fund.....	16,006,435	19,889,063	10,461,775	68,449,256	114,786,529
Undivided profits.....	9,090,919	4,685,356	3,713,637	24,403,030	41,300,943
National-bank notes outstand- ing.....	22,328,624	40,281,414	22,017,051	223,157,273	313,786,362
State bank notes outstanding.....	53,251	67,044		196,596	316,861
Dividends unpaid.....	202,727	778,241	153,546	1,532,910	2,667,430
Individual deposits.....	213,354,222	117,446,336	72,709,006	316,228,005	719,737,569
U. S. deposits.....	3,877,135	340,613	1,796,869	5,004,246	11,018,863
Deposits of U. S. disbursing officers.....	157,193	6,746	949,796	2,355,865	3,469,600
Due to national banks.....	81,915,319	32,048,687	21,240,841	13,935,410	149,200,257
Due to other banks and bankers.....	23,098,279	6,801,020	13,734,193	8,298,961	62,022,453
Notes and bills re-discounted.....		182,708	286,680	1,755,569	2,205,015
Bills payable.....		1,241,300	1,082,310	1,934,592	4,208,202
Totals.....	420,840,104	306,796,846	185,873,204	955,277,294	1,868,787,448

* The reserve cities, in addition to New York, Boston, Philadelphia, and Baltimore, are Albany, Pittsburgh, Washington, New Orleans, Louisville, Cincinnati, Cleveland, Chicago, Detroit, Milwaukee, Saint Louis, and San Francisco.

The following table exhibits the resources and liabilities of the national banks during the last nine years, at nearly corresponding dates for each year:

	Oct. 2, 1871.	Oct. 3, 1872.	Sept. 12, 1873.	Oct. 2, 1874.	Oct. 1, 1875.	Oct. 2, 1876.	Oct. 1, 1877.	Oct. 1, 1878.	Oct. 2, 1879.
	1,767 banks.	1,919 banks.	1,976 banks.	2,004 banks.	2,087 banks.	2,089 banks.	2,080 banks.	2,053 banks.	2,048 banks.
RESOURCES.									
	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>
Loans	831.6	877.2	944.2	954.4	984.7	931.3	891.0	834.0	878.5
Bonds for circulation	364.5	382.0	388.3	383.3	370.3	337.2	330.8	347.6	357.8
Other U. S. bonds	45.8	27.0	23.6	28.0	28.1	47.8	45.0	94.7	71.2
Other stocks, bonds, &c	24.5	23.5	23.7	27.8	33.5	34.4	34.5	36.9	39.7
Due from other banks	143.2	128.2	149.5	134.8	144.7	146.9	129.9	138.9	107.3
Real estate	30.1	32.3	34.7	38.1	42.4	43.1	45.2	46.7	47.8
Specie	13.2	10.2	10.9	21.2	8.1	21.4	22.7	30.7	42.2
Legal-tender notes	107.0	102.1	92.4	80.0	76.5	84.2	66.9	64.4	69.2
National-bank notes	14.3	15.8	16.1	18.5	18.5	15.9	15.6	16.9	16.7
Clearing-house exchanges	115.2	125.0	100.3	109.7	87.9	100.0	74.5	82.4	113.0
U. S. certificates of deposit		0.7	20.6	42.8	48.8	20.2	33.4	32.7	26.8
Due from U. S. Treasurer				20.3	19.6	16.7	16.0	16.5	17.0
Other resources	41.2	25.2	17.3	18.3	19.1	19.1	28.7	24.9	22.1
Totals	1,730.6	1,755.8	1,830.6	1,877.2	1,882.2	1,827.2	1,741.1	1,767.3	1,868.8
LIABILITIES.									
Capital stock	458.3	479.6	491.0	493.8	504.8	499.8	479.5	466.2	454.1
Surplus fund	101.1	110.3	120.3	120.0	134.4	132.2	122.8	116.9	114.8
Undivided profits	42.0	46.6	54.5	51.5	53.0	46.4	44.5	40.9	41.3
Circulation	317.4	335.1	340.3	334.2	319.1	292.2	291.0	301.9	313.8
Due to depositors	631.4	628.9	640.0	683.8	679.4	666.2	630.4	608.4	736.9
Due to other banks	171.9	143.8	173.0	175.8	179.7	179.8	161.6	165.1	201.2
Other liabilities	8.5	11.5	11.5	9.1	11.8	10.6	10.4	7.9	6.7
Totals	1,730.6	1,755.8	1,830.6	1,877.2	1,882.2	1,827.2	1,741.1	1,767.3	1,868.8

Section 333 of the Revised Statutes of the United States requires the Comptroller to present annually to Congress a statement of the condition of the banks and savings-banks organized under State laws. Returns of capital and deposits are made by these institutions and by private bankers, semi-annually, to the Commissioner of Internal Revenue for purposes of taxation. From these returns the following table has been compiled in this Office, exhibiting, in concise form, by geographical divisions, the total average capital and deposits of all the State and savings banks and private bankers of the country, for the six months ending May 31, 1879:

Geographical divisions.	State banks and trust companies.			Private bankers.			Savings-banks with capital.			Savings-banks without capital.	
	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Deposits.
		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>
New England States..	40	7.10	14.39	70	3.72	3.32	.....	.....	.....	420	306.46
Middle States	239	40.72	124.64	853	34.54	54.53	6	0.51	2.44	182	350.95
Southern States	251	27.43	32.60	237	5.64	11.89	3	0.86	0.83	3	1.69
Western States and Territories	475	52.02	85.44	1,474	25.85	70.18	20	2.85	32.80	33	27.96
United States....	1,005	127.27	257.07	2,634	69.75	139.92	29	4.22	36.07	644	747.06

The capital of the 2,048 national banks in operation on June 14, 1879, as will be seen by a subsequent table, was \$455,244,415—not including surplus, which amounted at that date to more than \$114,000,000—while

the average capital of all the State banks, private bankers, and savings-banks, for the six months ending May 31 previous, was but \$201,241,484, which amount is considerably less than one-half that of the national banks. The net deposits of the national banks were \$713,403,639, and the average deposits of all other banks, including savings-banks, were \$1,180,122,835. The average deposits for the same period of the 644 savings-banks having no capital stock, which are included in the above aggregate, were \$747,062,057.

The table below exhibits the aggregate average capital and deposits for the six months ending May 31, 1879, of all classes of banks other than national, and the capital and deposits of the national banks on June 14, following:

Geographical divisions.	State banks, savings-banks, private bankers, &c.			National banks.			Total.		
	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Capital.	Deposits.
		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>		<i>Millions.</i>	<i>Millions.</i>
New England States	536	10.83	384.17	544	164.43	128.79	1,080	175.26	512.96
Middle States	1,380	75.77	532.56	640	170.21	393.12	1,920	245.98	925.68
Southern States	484	33.92	47.02	176	30.40	37.93	670	64.32	84.95
Western States and Territories	2,002	80.72	210.37	688	90.20	155.63	2,690	170.92	372.00
United States	4,312	201.24	1,180.12	2,048	455.24	713.40	6,360	656.48	1,893.50

From this table it will be seen that the total number of banks and bankers in the country at the dates named was 6,360, with a total banking capital of \$656,485,899, and total deposits of \$1,893,526,474. In the appendix will be found tables showing by geographical divisions: the number, average capital, and deposits, of State and savings-banks and private bankers, for various periods from 1875 to 1878, and there will also be found other tables giving the assets and liabilities of State institutions during the past year, so far as they could be obtained from the official reports of the several State officers.

A table arranged by States and principal cities, giving the number capital and deposits, and the tax thereon, of all banking institutions other than national, for the six months ending May 31, 1879, will be found on a subsequent page. Similar tables for previous years will be found in the appendix.

The following table exhibits, for corresponding dates in each of the last four years, the aggregate amounts of the capital and deposits of each of the classes of banks given in the foregoing tables:

Years	National banks.			State banks, private banks, &c.			Savings-banks with capital.			Savings-banks without capital.			Total.		
	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Capital.	Deposits.	No.	Deposits.	No.	Capital.	Deposits.	
		Millions.	Millions.		Millions.	Millions.		Millions.	Millions.		Millions.		Millions.	Millions.	
1876	2,001	500.4	713.5	3,803	214.0	480.9	26	5.0	37.2	601	844.6	6,611	719.4	2,675.5	
1877	2,078	481.0	708.2	3,799	218.6	470.5	26	4.9	38.2	676	844.2	6,579	704.5	2,120.0	
1878	2,050	470.4	677.2	3,709	202.2	419.3	23	3.2	23.2	658	809.3	6,456	675.8	1,920.0	
1879	2,048	455.3	713.4	3,639	197.0	397.0	20	4.2	35.1	644	747.1	6,360	656.5	1,893.5	

The aggregate capital of the various classes of banks shown by the foregoing table has diminished from \$719,400,000 in 1876 to \$656,500,000 in 1879, and the aggregate deposits have fallen off from \$2,075,300,000 in 1876, to \$1,893,500,000 in 1879—a reduction of \$62,900,000 in capital and \$181,800,000 in deposits during the last four years. The national banking capital has diminished \$45,100,000, but the deposits of the national banks are almost precisely the same that they were in 1876. Savings-banks with capital show a reduction of about one million in capital and the same amount in deposits. The capital and deposits of State banks and private bankers are less by seventeen millions and eighty-three millions, respectively. The greatest reduction, however, is in the deposits of savings-banks without capital, which have diminished \$97,500,000.

THE NATIONAL BANKS AND THE REFUNDING OF THE PUBLIC DEBT.

The great war debt of the United States was contracted in less than four and a half years. In 1835 the country was entirely out of debt, and on January 1, 1861, the whole debt of the Union amounted to but \$66,243,721. During the next six months it increased at the rate of about four millions a month, being, on the first day of July, 1861, \$90,580,873. During the next year it increased at the rate of more than thirty-six millions per month, and at the close of the fiscal year ending June 30, 1862, it had reached \$524,176,412. At the end of the succeeding year it was considerably more than twice that amount, being on July 1, 1863, \$1,119,772,138. During the following year it increased nearly seven hundred millions, reaching on July 1, 1864, the sum of \$1,815,784,370. During the next nine months, to the close of the war, April 1, 1865, the debt increased at the rate of about two millions a day, or sixty millions a month, and for the five months next thereafter, at the rate of about three millions a day, or ninety millions a month, reaching its maximum on August 31, 1865*, at which date it amounted to \$2,845,907,626,† and was composed of the following items:

Funded debt†	\$1, 109, 568, 191 80
Matured debt.....	1, 503, 020 09
Temporary loans.....	107, 148, 713 16
Certificates of indebtedness.....	85, 093, 000 00
Five per cent. legal-tender notes.....	33, 954, 230 00
Compound interest legal-tender notes.....	217, 024, 160 00
Seven-thirty notes	830, 000, 000 00
United States notes (legal tenders).....	433, 160, 569 00
Fractional currency	26, 344, 742 51
Suspended requisitions uncalled for	2, 111, 000 00
Total	2, 845, 907, 626 56

This table shows an aggregate of more than one thousand two hundred and seventy-five millions of temporary obligations of the govern-

* Report of Secretary McCulloch, 1867, p. iv; 1868, p. xli.

† Less cash in the Treasury, \$88,218,055.

‡ This item includes \$1,253,000 of bonds issued to Pacific railroads.

ment, of which eight hundred and thirty millions bore interest at 7.30 per cent. annually.*

This immense amount of temporary obligations was funded within the three years which followed the close of the war; and the skill and good judgment displayed in so doing can only be fully appreciated by those who are familiar with the difficulties and delicate conditions under which the work was accomplished.

The temporary loans, certificates of indebtedness, seven-thirty notes, and all the other items of the debt—except the legal-tender notes and fractional currency, which have been largely reduced—have either been paid, have matured and ceased to bear interest, or have been funded into five-twenty six per cents, of which more than one thousand six hundred millions (\$1,602,698,950) were issued.

The acts of July 14, 1870, and January 20, 1871, authorized the issue of bonds for the purpose of refunding the five-twenty six per cents. The former act authorized the issue of fifteen hundred millions in bonds, two hundred millions of which were to be five per cents payable ten years after date, at the pleasure of the United States, three hundred millions of four and a half per cents payable in fifteen years, and one thousand millions payable in thirty years from the date of their issue, and bearing interest at the rate of four per cent. per annum. The act provided that these bonds should not be sold for less than their par value in coin, and that the proceeds should be applied to the redemption of the five-twenty bonds. The latter act increased the amount of the five per cent. bonds to five hundred millions, but provided that the whole amount of bonds issued should not exceed the amount originally authorized; and the subsequent act of January 25, 1879, authorized the refunding or exchanging of any other of the five or six per cent. bonds which were redeemable at the pleasure of the government.

The whole amount of the funded debt on the first of January, 1871, was \$1,935,342,700, of which \$1,437,097,300 consisted of five-twenty six per cent. bonds, and \$194,567,300 of ten-forty five per cent. bonds. On the first day of August, 1871, nearly sixty-six millions (\$65,775,550) of new five per cent. bonds had been subscribed for, chiefly by the national banks. During the same month an agreement was entered into by the Secretary with Jay Cooke & Co.† for the sale of the remaining two hundred millions of said bonds, and in the month of January, 1873, similar arrangements were made for the sale of a large additional amount.‡ The remainder of the five hundred millions (\$178,548,300) was sold during the next three years, the Secretary of the Treasury stating in his report of December 6, 1875,§ that he had “the pleasure of announcing to Congress that the funding of five hundred millions six per cent. bonds into those bearing five per cent. interest has been accomplished.”

On August 24, 1876, a new contract was made by the Secretary with A. Belmont & Co. and associates,|| for the sale of the three hundred millions of four and a half per cent. bonds authorized. In this contract the Secretary reserved the right to terminate it by giving ten days' notice to the contractors, and under the contract calls were made prior to March 4, 1877, for the redemption of one hundred millions of six per cents. In May, 1877, the present Secretary, availing himself of the privilege secured in the contract, gave notice that he would limit the sale of four

* At that date one thousand seven hundred and twenty-five millions of the public debt bore an average interest of 6.62 per cent. Finance Report, 1865, p. 23.

† Secretary Boutwell's report, 1871, p. xvii.

§ Secretary Bristow's report, 1875, p. xii.

‡ Secretary Richardson's report, 1873, p. ix.

|| Secretary Morrill's report, 1876, p. xi.

and a half per cents to two hundred millions; and additional subscriptions were rapidly made until that amount was taken. The avails of one hundred and eighty-five millions of these bonds were applied to the redemption of five-twenties, the remaining fifteen millions being held for resumption purposes. On the 9th of June, 1877, a contract was made with a syndicate for the sale, at par, in coin, of the four per cent. bonds authorized to be issued by the refunding act, with the right to terminate the contract at any time after December 31, 1877, by giving ten days' notice to the contracting parties.* In 1877 seventy-five millions of the four per cents were sold, and in 1878 more than one hundred and twenty-eight millions (\$128,685,450). During the first four months of 1879 \$497,247,750 additional fours were disposed of, of which more than one hundred and forty-nine millions were sold at a premium of one-half of one per cent. Of this amount, one hundred and twenty-one millions were taken by the First National Bank of New York and associates, and the remainder by other national banks. These, with the sales of forty millions of refunding certificates, completed the refunding of all the bonds of the United States which were redeemable.

The sales of United States bonds since 1871, under the refunding acts, have been five hundred millions of fives, one hundred and eighty-five millions of four-and-a-halves, and \$710,345,950 of four per cents; in all, more than one thousand three hundred and ninety-five millions of dollars. There have also been sold for resumption purposes, since March 1, 1877, under the authority of the resumption act of January 14, 1875, twenty-five millions of fours, and sixty-five millions of four and a half per cents; fifty millions of the latter being at a premium of one and a half per cent.

The reduction on the interest-bearing debt of the United States, from its highest point, on August 31, 1865, to November 1, 1879, is \$583,886,594, of which amount \$105,160,900 has been effected since the refunding operations were commenced on May 1, 1871.

At its highest point the annual interest on the debt was \$150,977,697, while it is now \$83,773,778 only. There has, therefore, been a total reduction in this charge of \$67,203,919 annually.

The total annual reduction of interest under these refunding operations, accomplished since March 1, 1877, is \$14,290,416, while the saving on this account growing out of the operations of the present year alone, is nearly nine millions (\$8,803,707), and the total annual saving in all the refunding operations of the government since 1871 is nearly twenty millions (\$19,900,846). These funding transactions are believed to be without parallel in financial history.

The public debt of England in January, 1793, amounted to \$1,191,145,000. At that date began the great expenditures caused by the wars of the French revolution and of Napoleon, extending from 1793 to 1816. Between these dates stock and annuities to the amount of \$3,881,000,000 were placed on the market at rates of interest varying from 3 to 5 per cent. The average rate of discount at which the stock was sold was 33 per cent., and the average rate of interest paid on the money actually raised by the sale was 5.15 per cent.

After a long interval of peace, the Irish famine in 1847, and the Crimean war and Indian mutiny, from 1854 to 1856, caused other additions to the public debt. In the years 1847, 1855, and 1856, three per cent. interest-bearing stock, to the amount of one hundred and seventy

* Secretary Sherman's report for 1877, p. viii.

millions of dollars, was issued, and sold at a discount of 10.94 per cent., while the average rate of interest paid on the money raised by the sale was 3.4 per cent.*

The three great Fench loans in 1870, 1871 and 1872, of nearly fifteen hundred and ninety-two millions of dollars, realized twelve hundred and seventy-three millions of dollars only. The first loan was at the rate of 3 per cent., and realized to investors nearly 5 per cent., while the two

* The figures given in the following table, relative to the loans of 1793-1817, inclusive, are based upon information derived from a somewhat similar table originally published in McCulloch's "Treatise on Taxes and the Funding System," London, 1852, and republished in the appendix to an essay of William Newmarch, on the "Loans raised by Mr. Pitt," which essay appeared in the London Statistical Journal for September, 1855. The figures relating to the loans of 1847-1856 are derived from Sir Stafford Northcote's "Twenty Years of Financial Policy," pp. 94, 265, 278, 288.

Year.	Stock issued (£ = \$5).	Money raised on stock issued (£ = \$5).	Annual in- terest on stock (£ = \$5).	Average discount on sale of stock.	Average interest realized by invest- ers.	Kind of stocks.
1793.....	\$31,250,000	\$22,500,000	\$850,000	Pr. ct. 28	4.22	3 per cent. consols.
1794.....	78,350,000	64,550,000	3,000,000	17.6	4.65	3 per cent. consols : 4 per cent. with long annuity.
1795.....	277,700,000	210,450,000	10,650,000	24.2	5.06	Do.
1796.....	284,700,000	213,800,000	11,350,000	24.9	5.31	2 per cent. consols ; 5 per cent. with long annuity.
1797.....	145,100,000	73,100,000	4,650,000	49.6	6.36	3 per cent. consols : 4 per cent. with long annuity.
1798.....	178,100,000	90,000,000	5,500,000	49.5	6.11	3 per cent. consols ; long annuity.
1799.....	109,350,000	62,500,000	3,250,000	42.8	5.20	3 per cent. consols.
1800.....	145,200,000	92,500,000	4,350,000	36.3	4.70	Do.
1801.....	279,750,000	172,050,000	8,850,000	38.5	5.14	Do.
1802.....	151,750,000	115,000,000	4,550,000	24.2	3.96	3 per cent. consols, with long annuity.
1803.....	80,000,000	50,000,000	2,550,000	37.5	5.10	Do.
1804.....	90,100,000	50,000,000	2,700,000	44.5	5.40	3 per cent. consols.
1806.....	197,700,000	107,600,000	5,700,000	45.6	5.30	Do.
1806.....	149,400,000	90,000,000	4,450,000	39.8	4.94	Do.
1807.....	91,850,000	61,000,000	2,900,000	33.0	4.75	Do.
1808.....	68,450,000	60,000,000	2,950,000	12.3	4.92	
1809.....	110,850,000	97,650,000	4,750,000	11.9	4.86	
1810.....	99,050,000	81,550,000	3,800,000	17.7	4.66	4 per cents.
1811.....	146,200,000	120,000,000	5,950,000	17.9	4.96	3 per cent. consols, with long annuity.
1812.....	203,700,000	139,350,000	7,400,000	31.6	5.31	3 per cent. consols ; 5 per cents.
1813.....	468,650,000	293,800,000	16,150,000	37.3	5.50	3 per cent. consols, with long annuity.
1814.....	123,450,000	92,500,000	4,250,000	25.1	4.59	
1815.....	354,450,000	225,650,000	12,900,000	36.3	5.72	3 per cent. consols ; 4 per cents.
1816.....	15,000,000	15,000,000	450,000	0	3	
Totals.....	3,881,000,000	2,600,550,000	134,000,000	33	5.16	
Feb'y, 1847.....	40,000,000	35,800,000	1,200,000	10.5	3.35	
April, 1855.....	80,000,000	70,100,000	2,400,000	12.4	3.42	3 per cents.
Feb'y, 1856.....	25,000,000	22,500,000	750,000	10	3.33	Do.
May, 1856.....	25,000,000	23,177,500	750,000	7.3	3.24	Do.
4 Totals.....	4,651,000,000	2,732,127,500	139,100,000	32.1	5.05	Do.

In 1793 the total funded and floating debt of Great Britain was \$1,239,372,170, the interest on which, at the several rates of 3, 3½, 4, and 5 per cent., amounted annually to \$48,556,190. In 1817 the total debt, including exchequer bills, had reached the sum of \$4,196,910,725, carrying an annual interest of \$157,959,635. In 1857 the amount of the funded debt, exchequer bills and exchequer bonds, was \$4,040,543,610, the annual interest upon which was \$142,750,195. The total debt had diminished in 1875 to \$3,876,741,930, with an annual charge for interest and cost of management of \$135,472,400; while in 1878 there appeared a slight increase, the amount of the debt being then \$3,888,907,980, with interest and cost of management equaling \$142,063,756.

subsequent and larger loans were sold at 82.5 and 84.5 per cent., which was about equivalent to 6 per cent. bonds at par.*

The following table exhibits the classification of the unmatured, interest-bearing bonded debt of the United States on August 31, 1865, when it reached its maximum, and on the first day of July annually

It appears from official documents that the national debt of Great Britain, with its interest and cost of management, stood, at the dates named below, as follows:

1853.

Many of the loans which the debt comprised were what are known as perpetual loans and annuities, some of which, as well as previous loans, which then bore interest at the rates of 5 and 4 per cent., were, during the twenty-three years from 1822 to 1844, inclusive, refunded from time to time into stocks bearing interest at the rate of 4, 3½, 3¼, and 3 per cent. During this period the principal of the debt was reduced \$5,251,900 only, but the annual saving to the government through refunding at lower rates of interest was \$15,259,000.

The refunding operations were continued subsequent to 1844, until in 1854 there remained no stocks bearing a greater interest than 3 per cent., except the new 3¼ per cents, which were in 1855 also reduced to threes. In this process nothing was added to the principal of the debt. This information is obtained from the standard authorities above referred to.

It is here worthy of remark that the consols, standing in 1853 at £500,000,000, constituted at that time 65 per cent. of the entire national debt. This 3 per cent. stock cannot under the conditions of its issue be redeemed by the government without giving to its holders a full year's notice of payment. It is well understood, however, that the government cannot with prudence or safety venture upon the bold policy to which the giving of such a notice would commit it, thereby assuming all the risks incident to a change of circumstances in the interval between notice and time of payment. See Sir Stafford Northcote's "Twenty Years of Financial Policy," p. 242.

The reserved option of redemption in the terms of the great war-loans of the United States is of much greater value to our government than is the virtual perpetuity of the British consols to the government of Great Britain; for through this option the Treasury has been enabled to refund the outstanding bonds of the United States at the present low current rate of interest, and thus on notice so brief that no risk whatever was incurred thereby, while the British exchequer is in effect prevented from availing itself of any decline in the rates of interest, but must continue to pay 3 per cent. upon its enormous amount of debt, though it might otherwise refund or borrow money for its redemption, at a greatly reduced rate.

The resulting savings arising out of that provision in our loans which authorizes the anticipation of the time of their redemption may eventually wholly offset the excess in the rate of interest paid upon them over that paid on the British consols, which excess is now, as to the greater part of our loans, but 1 per cent. annually.

*The following table in reference to the French loans of 1870-71-72 has been compiled from data given in the May, 1877, number of the *Bulletin De Statistique et De Legislation Comparée*:

Date of loans.	Rate of interest.	Amount of loans (1 fr.=19.3 cts.)	Amount received for each 100 dollars of loan.	Total amount received from loans. (1 fr.=19.3 cts.)	Rate of interest realized to investors.
					Per cent.
August 12, 1870.....	3	\$256,241,895	\$90.00	\$155,282,431	4.95
June 29, 1871.....	5	536,444,639	82.50	442,806,827	6.06
July 15, 1872.....	5	709,121,557	84.50	675,257,715	5.92
Total.....		1,501,807,091		1,273,346,973	

thereafter, together with the amount outstanding on November 1 of the present year:

Date.	6 per cent. bonds.	5 per cent. bonds.	4½ per cent. bonds.	4 per cent. bonds.	Total.
Aug. 31, 1865.....	\$668,518,091	\$199,792,100	.....	.....	\$1,10
July 1, 1866.....	1,008,388,400	198,528,435	.....	.....	1,20
July 1, 1867.....	1,421,110,719	198,533,435	.....	.....	1,61
July 1, 1868.....	1,841,521,800	221,588,400	.....	.....	2,06
July 1, 1869.....	1,880,341,300	221,589,300	.....	.....	2,10
July 1, 1870.....	1,764,832,300	221,589,300	.....	.....	1,98
July 1, 1871.....	1,618,897,300	274,236,450	.....	.....	1,89
July 1, 1872.....	1,974,883,800	414,567,300	.....	.....	1,78
July 1, 1873.....	1,281,238,650	414,567,300	.....	.....	1,69
July 1, 1874.....	1,213,624,700	510,628,050	.....	.....	1,72
July 1, 1875.....	1,100,865,650	607,132,750	.....	.....	1,70
July 1, 1876.....	984,999,650	711,685,800	.....	.....	1,69
July 1, 1877.....	854,621,850	703,266,650	\$140,000,000	.....	1,66
July 1, 1878.....	738,619,000	703,266,650	240,000,000	\$98,850,000	1,78
July 1, 1879.....	310,932,500	646,905,500	250,000,000	679,878,110	1,88
Nov. 1, 1879.....	283,681,350	508,440,350	250,000,000	740,845,650	1,78

The refunding of the national debt commenced in 1871, at which time the national banks held nearly four hundred millions of the five and six per cent. bonds; and from that date to the present time they have held more than one-fifth of the interest-bearing debt of the United States. A large portion of the bonds held by them in 1871 bore interest at the rate of 6 per cent. This class of bonds has since been greatly reduced, and is now less than one-sixth of all the bonds pledged for circulation, while more than one-third of the amount consists of bonds bearing interest at 4 per cent. This will be seen from the following table, which exhibits the amounts and classes of bonds owned by the banks, including those pledged as security for circulation and for public deposits, on the first day of July of each year since 1865, and upon November 1 of the present year:

Date.	U. S. bonds held as security for circulation.					U. S. bonds held for other purposes at nearest date.	Grand total.
	6 per cent. bonds.	5 per cent. bonds.	4½ per cent. bonds.	4 per cent. bonds.	Total.		
July 1, 1865.....	\$170,382,500	\$68,576,800	.....	.....	\$238,959,300	\$156,785,750	\$395,744,850
July 1, 1866.....	241,083,600	86,226,850	.....	.....	327,310,380	121,152,850	448,463,300
July 1, 1867.....	251,430,400	89,177,100	.....	.....	340,607,500	84,002,650	424,610,150
July 1, 1868.....	250,726,950	90,768,950	.....	.....	341,495,900	80,922,500	422,418,400
July 1, 1869.....	255,190,350	87,661,250	.....	.....	342,851,600	55,102,000	397,953,600
July 1, 1870.....	247,355,350	94,923,200	.....	.....	342,278,550	43,960,800	386,259,105
July 1, 1871.....	220,497,750	139,387,800	.....	.....	359,885,550	89,450,800	449,336,350
July 1, 1872.....	173,251,450	207,189,250	.....	.....	380,440,700	81,868,200	412,308,900
July 1, 1873.....	160,923,500	229,487,050	.....	.....	390,410,550	25,724,400	416,134,950
July 1, 1874.....	154,370,700	236,800,500	.....	.....	391,171,200	25,347,100	416,518,300
July 1, 1875.....	136,955,100	239,359,400	.....	.....	376,314,500	26,900,200	403,214,700
July 1, 1876.....	106,813,450	232,081,300	.....	.....	341,394,750	45,170,300	386,565,050
July 1, 1877.....	87,690,300	206,051,050	\$44,372,250	.....	338,113,600	47,315,050	385,028,650
July 1, 1878.....	82,421,200	190,514,550	48,448,650	\$19,182,000	340,566,400	68,850,900	418,397,300
July 1, 1879.....	54,042,800	144,618,300	35,056,550	118,538,950	354,254,600	76,603,520	430,858,120
Nov. 1, 1879.....	50,315,450	131,301,000	34,860,930	138,318,400	303,802,400	71,181,250	484,983,650

It is certain that if the national banking system had not existed, and United States notes had alone been issued, the refunding operations here described and the consequent large reduction of interest upon the public debt would not have been possible.

The Secretary of the Treasury, in his report for 1862, said that among the advantages which would arise from the establishment of a national banking system would be the fact that the bonds of the government would be required for banking purposes; a steady market would be

established, and their negotiation greatly facilitated; a uniformity of price for the bonds would be maintained at a rate above that of funds of equal credit, but not available as security for circulation. "It is not easy to appreciate the full benefits of such conditions to a government obliged to borrow;" it will "reconcile, as far as practicable, the interests of existing institutions with those of the whole people;" and will supply "a firm anchorage to the union of the States."

There is no doubt that these expectations have been more than realized, and that the credit of the United States and its ability to borrow money at low rates of interest have been greatly enhanced by placing its bonds in large amounts in the possession of the leading monetary institutions of nearly every city and village in the Union.

The wisdom of Secretary Chase, and of others who, in 1862, advocated the establishment of a national banking system, was long since recognized by those who understood the principles which should govern a sound system of currency and banking; but, in the light of the extraordinary financial operations of the government during the present year, the wisdom and the economy of the system, both for the government and the people, are now more apparent than ever.

The government has still outstanding \$273,631,350 in six per cents, and \$508,440,350 in five per cents, all of which will mature in 1881. The refunding of these bonds into four per cents will save \$10,558,030 in interest annually. The credit of the government is now such that it is not improbable that long before the maturity of the fours the present debt may be refunded into three and a half per cent. bonds, which is one-half of one per cent. more than the rate of the English consols, thereby saving a large additional amount of interest.

RESUMPTION OF COIN PAYMENTS.

The act of January 14, 1875, required the Secretary of the Treasury, on and after January 1, 1879, to redeem "in coin the United States legal-tender notes then outstanding, on their presentation for redemption at the office of the assistant treasurer of the United States in the city of New York, in sums of not less than fifty dollars." At the time of the passage of this act the leading industries and general business of the country were greatly depressed. The agricultural classes were largely in debt, and the failures of mercantile establishments and manufacturing corporations in the three years previous represented more than \$500,000,000. During the succeeding years an era of economy supervened, agricultural products greatly increased,* and the balance of trade was turned largely in our favor—the excess of exports over imports for the fiscal year 1876 being more than seventy-nine millions, in 1877 more than one hundred and fifty one millions, in 1878 exceeding two hundred and fifty-seven millions, and for the year ending September 30 last more than two hundred and ninety-four millions. For 1878 the excess was, it will be seen, more than three times as great as that of 1876, and more than two-thirds greater than that of 1877.†

* The Department of Agriculture estimates the product of corn in 1878 at 1,338 millions bushels; wheat, 420 millions; oats, 414 millions; barley, 42 millions; rye, 26 millions; cotton, 2,347 millions pounds; tobacco, 393 millions pounds. The estimates for 1879 are: Corn, 1,601 millions bushels; wheat, 449 millions; oats, 364 millions; barley, 40 millions; rye, 24 millions; cotton, 2,217 millions pounds; tobacco, 384 millions pounds.

† Excess of exports in fiscal year 1876, \$79,643,481; in 1877, \$151,152,094; in 1878, \$257,814,234; during the calendar year 1878, \$305,279,590; and during the fiscal year 1879, \$264,661,666.

The resumption act not only fixed the day of resumption, but authorized the Secretary, in order to prepare and provide therefor, to use any surplus revenues not otherwise appropriated, and to issue, sell, and dispose of, at not less than par in coin, any of the bonds of the United States described in the act of July 14, 1870. Under this act, the Secretary in 1877 sold at par in coin fifteen millions of four-and-a-half and twenty-five millions of fours; and in April, 1878, he sold fifty millions of four and a half percents at a premium of one and a half percent. The coin in the Treasury continually increased, so that on the day of resumption the Secretary held one hundred and thirty-five millions (\$135,382,639) of gold coin and bullion, and, in addition, over thirty-two millions (\$32,476,095) in silver coin and bullion, the gold coin alone being nearly equal to forty per cent. of the United States notes then outstanding.

The banks in the cities of New York and Boston strengthened the hands of the government by their action in October, 1878, an account of which will be found in my report for that year. The assistant treasurer of the United States at New York became a member of the clearing-house, thus facilitating the business of the banks with the government, and the banks agreed to receive United States notes, not only for their ordinary balances, but in payment of the interest upon the public debt and of other coin obligations of the government. The banks of the country at the date of resumption held more than one-third of the outstanding Treasury notes; but they had so much confidence in the ability of the Secretary to maintain resumption that none were presented by them for redemption. The people also, who held more than three hundred millions of the issues of the national banks, which issues were based upon the bonds of the nation, preferred such notes to coin itself. There was, therefore, no demand for payment of the notes of the government, and the gold coin in the Treasury, which amounted to one hundred and thirty-five millions on the day of resumption, increased more than thirty-six millions in the next ten months, the amount held on the first day of November, 1879, exceeding one hundred and seventy-one millions.

The Comptroller has for a series of years presented in his reports the following table, showing the amount of Treasury notes and of national-bank notes outstanding at the dates named therein, with the currency price of gold and the gold price of currency at the same dates:

Date.	United States issues.			Notes of national banks including gold notes.	Aggregate.	Currency price of \$100 gold.	Gold price of \$100 currency
	Legal tender notes.	Old demand notes.	Fractional currency.				
August 31, 1865...	\$432,737,604	\$402,965	\$26,344,742	\$176,213,955	\$635,719,266	\$144 25	\$69 32
January 1, 1866...	423,838,319	392,070	26,000,420	256,588,419	750,820,228	144 50	69 20
January 1, 1867...	380,276,180	221 632	28,732,812	296,846,206	709,070,860	133 00	75 18
January 1, 1868...	356,000,000	150,127	31,597,583	290,747,569	687,504,279	133 25	75 04
January 1, 1869...	353,892,975	128,088	34,215,715	269,029,322	689,868,110	135 00	74 07
January 1, 1870...	356,000,000	113,086	39,762,664	296,904,029	695,779,791	120 00	83 33
January 1, 1871...	356,000,000	101,086	38,995,089	306,307,672	702,403,847	110 75	90 29
January 1, 1872...	357,500,000	92,801	40,767,877	328,465,431	726,820,109	109 50	91 32
January 1, 1873...	358,557,907	84,387	45,722,061	341,582,812	748,047,167	112 00	89 28
January 1, 1874...	378,401,702	70,637	48,544,792	350,848,236	777,874,367	110 25	90 70
January 1, 1875...	382,000,000	72,317	46,390,598	354,128,250	782,501,165	112 50	88 89
January 1, 1876...	371,827,220	69,042	44,147,072	340,479,756	762,323,690	112 75	88 69
January 1, 1877...	366,053,084	65,462	26,348,206	321,595,690	714,061,558	107 00	93 46
January 1, 1878...	349,943,776	65,532	17,764,109	321,672,505	689,443,922	102 87	97 21
January 1, 1879...	346,681,016	62,035	16,108,159	323,791,671	686,642,884	100 00	100 00
November 1, 1879...	346,681,016	61,305	15,710,960	337,161,418	690,631,759	100 00	100 00

of the highest point reached between the suspension and the resumption of specie payment.

It was generally supposed that upon the day of resumption the amount of available currency would be immediately increased by the addition to its volume of the coin of the country; but it is now evident that this expectation has not been realized. The Treasury owns nearly one hundred and fifty-eight millions of gold coin and bullion, a large portion of which is a basis for the redemption of the Treasury notes outstanding, and fifty millions of standard silver dollars and subsidiary coinage, none of which can properly be included in the aggregate circulation. The average gold coin held by the national banks as a reserve during the three years ending January 1, 1879, was about thirty millions. The coin upon the Pacific coast, in the State of Texas, and in the mountain districts of the country, amounting to say forty millions, as well as the subsidiary silver coin outstanding, amounting to thirty millions, had been continually in circulation previous to the present year. Deducting these amounts from the total, there would remain but about one hundred and twenty millions of currency in excess of previous years. Of this excess a large amount has probably been for many years hoarded by the people—now estimated to number forty-nine millions—and, if so, does not enter into circulation in any greater degree than before resumption. The hoarders of coin and of small savings are a timid class, who do not easily part with their treasure. The amount of coin and currency in actual circulation at the present time may not therefore be greatly in excess of the average amount during the last five years.

It is probable that at no time since the date of suspension has so large an amount of currency been needed for the legitimate purposes of business as during the present year. The harvests have been unprecedentedly large, while the value of agricultural products, owing to the short crops of other nations and the consequent demand for our products abroad, has greatly increased. There has also been a rise in wages, in the value of manufactured goods, in provisions, and in the prices of iron and other commodities.

If this statement is correct, it will explain the scarcity of currency in the city of New York during the last three months, and the consequent demand for additional issues; the amount of national-bank notes issued from September 1 to November 26, being nine millions, which is more than the increase for the ten months preceding. It will also explain why the banks in New York City have grudgingly presented for payment their legal-tender certificates, and have been obliged to designate one of their number as a depository for gold, on which Clearing-House certificates are issued and used in settling their exchanges.

Notwithstanding the large increase of specie in the country during the past year, the amount held by the banks has by no means increased in proportion. The amount held on October 1, 1878, was \$30,688,606; on the 1st day of January, 1879, \$41,499,757; and on the 2d of October last, \$42,173,732—showing an increase on that day of less than seven hundred thousand dollars since the date of resumption. The more recent returns, however, of the national banks in the city of New York to the clearing-house, show a further increase of \$27,633,032 of specie, and a loss in legal-tender notes of \$16,578,234, for the week ending November 22. The amount of cash reserve now required to be held by all of the banks is less than ninety-four millions, as will be seen by the following table, which gives the amount held and required for the banks in the city

of New York, in the reserve cities, and for the other banks, separately, at the dates named:

NEW YORK CITY.

	October 1, 1878.	January 1, 1879,	October 2, 1879.
Specie.....	\$13,294,602	\$18,161,093	\$19,349,868
Legal-tender notes	14,893,468	16,351,562	19,738,584
United States certificates of deposit.....	21,660,000	18,695,000	12,900,000
Amount held.....	49,848,070	53,207,655	51,988,453
Amount required.....	46,374,285	46,011,118	51,408,068

OTHER RESERVE CITIES.

Specie.....	9,405,014	11,760,521	11,348,903
Legal-tender notes	10,413,438	21,811,373	19,819,282
United States certificates of deposit.....	10,035,000	9,185,000	13,135,000
Amount held.....	38,853,452	42,756,894	44,303,185
Amount required.....	23,402,748	23,496,840	26,952,810

STATES AND TERRITORIES.

Specie.....	7,988,990	11,578,143	11,474,961
Legal-tender notes	30,064,665	32,374,428	29,628,096
United States certificates of deposit.....	995,000	1,035,000	735,000
Amount held.....	39,048,655	44,987,571	41,838,057
Amount required.....	13,738,718	13,807,826	15,419,246

UNITED STATES.

Specie.....	30,688,606	41,499,757	42,173,732
Legal-tender notes	64,371,571	70,537,363	69,185,962
United States certificates of deposit.....	32,690,000	28,915,000	26,770,000
Amount held.....	127,750,177	140,952,120	138,129,694
Amount required.....	83,605,751	83,315,784	93,780,124

From this statement it will be seen that the banks outside of the large cities held, on October 2, \$11,474,961 of specie, which nearly equals three-fourths of the full amount of cash reserve which they are required to hold, while the banks in New York and in the other principal cities held in specie considerably less than one-half of their legal cash reserve.

The Comptroller urgently recommends that all the national banks shall take advantage of the present influx of gold to accumulate in their vaults an amount equal to the total cash reserve required by law. He indulges the hope that the reports of another year may show them to be possessed of at least \$100,000,000 of gold coin. If this coin, which is still flowing into the Treasury, shall also be largely accumulated by the banks, it will be more likely to become diffused among the people. This would certainly be the case if the smaller denominations of notes were withdrawn from circulation, which might perhaps be done without inconvenience if postal-orders were issued in small amounts and at a minimum cost at every post-office.

The addition of coin to the circulation should have the effect to reduce the amount of paper money if in excess of the wants of business, and to send homeward for redemption the legal-tender and national-bank notes. If the legal-tender notes accumulate in the Treasury, they cannot again be issued except upon requisitions of the govern-

ment; and the accumulation of such notes has a tendency to induce extravagant appropriations and expenditures by Congress. The law, as it now stands, requires that the Secretary shall keep in circulation the legal-tender notes, which is not practicable; and their accumulation by him will lead to constant agitation of the subject in Congress and among the people, which discussions will encourage speculation and disturb the current of legitimate business. With the influx of specie it is important that such a paper currency shall be in circulation as can be easily retired, if in excess. A currency is needed which will act automatically and as a regulator, like the governor in machinery or the balance-wheel in the chronometer. The best currency is that which will most readily adapt itself to the needs of business, and its relative cost should not be taken into consideration; for the best money is always the cheapest in the end. This principle was recognized by those who reluctantly recommended and voted for the legislation which authorized the issue of Treasury notes as a temporary measure; and a review of the debates in Congress, while that measure was pending before it, will show that the principal objection to the bill was acknowledged, both by those who favored and those who opposed its passage, to be that the government circulating note did not have the chief attributes of a perfect currency, and that its issue would tend to disturb values, and thus derange the commerce and business of the country. "The Treasury note represents no business capital, and its volume is controlled, not by the demands of business and the wants of the country, but by the views and action of political parties, and of Congress. The national-bank note, on the other hand, is based upon eight hundred and thirty millions of bills receivable, and an equally large amount of other assets, a large proportion of which is readily convertible into money. The deposits and balances of the banks amount to more than six hundred millions, and their circulating notes are promptly redeemed, with but little expense to the holders, through the use of their assets, which represent their capital, surplus, and deposits. If more notes are issued to the banks than are necessary for the requirements of business, they can be easily retired. If a larger amount is desired, they can be readily obtained upon application in the manner provided by law."*

The Comptroller cannot too urgently ask the attention of Congress to the following views of Secretary Chase, as submitted by him in his annual report for 1862, just previous to the passage of the national-bank act:

"The recommendations, now submitted, of the limited issue of United States notes as a wise expedient for the present time, and as an occasional expedient in future times, and of the organization of banking associations to supply circulation secured by national bonds and convertible always into United States notes, and, after resumption of specie payments, into coin, are prompted by no favor to excessive issues of any description of credit moneys.

"On the contrary, it is the Secretary's firm belief that by no other path can the resumption of specie payments be so surely reached and so certainly maintained. United States notes, receivable for bonds bearing a secure specie interest, are next best to notes convertible into coin. The circulation of banking associations organized under a general act of Congress, secured by such bonds, can be most surely and safely maintained at the point of certain convertibility into coin. It temporarily these associations redeem their issues with United States

* Comptroller's report for 1878, p. 22.

notes, resumption of specie payments will not thereby be delayed or endangered, but hastened and secured; for just as soon as victory shall restore peace, the ample revenue, already secured by wise legislation, will enable the government, through advantageous purchases of specie, to replace at once large amounts, and, at no distant day, the whole of this circulation, by coin, without detriment to any interest, but, on the contrary, with great and manifest benefit to all interests.

“The Secretary recommends, therefore, no mere paper-money scheme, but, on the contrary, *a series of measures, looking to a safe and gradual return to gold and silver as the only permanent basis, standard, and measure of values recognized by the Constitution.*

“No country possesses the true elements of a higher credit; no country, in ordinary times, can maintain a higher standard of currency and payment than the United States.”

Resumption has made the dollar of the same value at home and abroad. The refunding of the debt has placed idle funds in the hands of such holders as have declined to reinvest in the four per cents. The good harvests, the shipment of produce, the large annual production of gold and silver from the mines, and the importation of gold, which still continues, will certainly make money abundant, and have already stimulated speculation to an unhealthy degree, and will be likely to do so in the future. Not long hence the specie which has so long been hoarded, or which has hitherto been used only in payment to the government of duties on imports or in the purchase of foreign exchange, will be brought into general use. The effect of the present increasing and prospective redundancy of the currency* is manifest in the transactions of the stock board during the last three months, which are said to be the largest on record, one-fourth of which are estimated to have been based upon stocks which pay no dividends. The increase in the market value of many classes of bonds which have heretofore been considered almost worthless has brought upon the market a flood of shares of mining and other corporations, many of them fictitious. The necessities of life, as well as articles of luxury, have sympathized in the upward movement, and their prices, if not already too high, are likely soon to rise beyond a reasonable limit.

The influx and accumulation of a large amount of specie may thus result in injury instead of benefit. The payment by the French nation to Germany of five thousand millions of francs brought about an unhealthy rise of prices and deranged the business of the German Empire, while France, notwithstanding the prompt liquidation of its enormous obligation, speedily recovered its wonted prosperity. In England, also, immediately after resumption, a similar financial revulsion was experienced. Leone Levi, in a late address,† refers to this subject as follows:

“Soon after the war ended, the Bank of England was ready to resume cash payments, and, with an increasing demand for produce and manufactures, commerce immediately revived. For a time the alternation of revival and depression continued; but from 1820 to 1824 trade was in a prosperous condition; the crops were abundant, and with an addition in the amount of bullion in the Bank of England, from £1,746,000

* The total amount of specie imported from January 1, 1879, to November 15, is \$75,512,392, of which \$35,124,200 has arrived since August 1. The production of precious metals for the fiscal year 1879 is estimated by the Director of the Mint at \$79,711,990, of which \$38,899,858 is gold and \$40,812,132 is silver.

† Lecture on Commercial Crises, delivered at King's College, London, by Professor Leone Levi, Bankers' Magazine, New York, vol. xiii, p. 43.

in February, in 1820, to £6,092,000 in February, 1824, and a large addition to its deposits of from £5,000,000 in 1820, to £11,000,000 in 1824, speculation began to set in in earnest. Other circumstances contributed to this end. Government came forward in 1823 with a measure for the reduction of the rate of interest from five to four per cent. upon consols to the amount of £135,000,000, and in 1824 for the reduction of four to three per cent. on £80,000,000. The acknowledgment of the South American Republic introduced a new kind of commerce in loans and mining in foreign countries. A large number of companies were started for railroads, mining, canals, insurance, banking, gas, &c., six hundred and twenty-four in number, requiring a nominal capital of £372,000,000, for which, however, no more than £17,600,000 were actually advanced; and prices of all commodities, and of securities of all kinds, rose enormously, but the fall was as precipitous as the rise was unjustified, and to unbounded credit and confidence there soon succeeded a general distrust, during which the best securities could not be converted and goods were rendered unsalable."

History repeats itself; and the experience of England, and of Germany, and our own experience in former days, seem not unlikely again to be repeated in this country.

A currency which will adapt itself to the existing circumstances is particularly needed at the present time, and it will be the province of Congress to watch carefully the indications of an excess of paper money, and to prevent by proper legislation the mischief and danger of a redundant and non-elastic currency.

PROPOSED SUBSTITUTION OF TREASURY-NOTES FOR NATIONAL-BANK NOTES.

In order to save the net amount of about twelve millions of interest now paid by the government upon the bonds deposited by the banks to secure their circulating notes, it is proposed to abolish the national-banking system, and to substitute additional Treasury-notes for the notes now issued by the banks.

Such a measure, if adopted, will not result in profit to the government, because nearly the amount now paid in interest to the banks, as has already been seen, can be saved to the government by refunding the bonds bearing a higher rate of interest into those bearing interest at four per cent., while a further issue of Treasury-notes must necessarily arrest the operation of refunding the debt. The amount of annual loss, if refunding cease, will be \$10,558,030; but if refunding continue and the whole debt shall be eventually funded into three and one-half per cent. bonds, there will be an additional saving of nearly ten millions. Moreover, if, as is proposed in this measure, the government should issue all the circulation of the country in the form of Treasury-notes, it must keep on hand at all times, to protect this circulation, a large amount of reserve, the interest on which would amount to nearly as much as the net interest now received by the national banks.

The abolition of the national banking system would be immediately followed by the repeal of section 3412 of the Revised Statutes, imposing a tax of 10 per cent. upon State bank notes, thus reviving the diverse banking systems of forty different States, and with them the former rates of exchange between the commercial centers of the country and other points. The banks now organized under the national system would reorganize under the laws of the several States in which they

are located; and under those laws they would be enabled to realize much greater profits than they now receive, not alone from circulation, but, in addition, from the sale, at high rates, of sight bills of exchange, rendered necessary to internal commerce by the inequality in value, in different localities, of circulating notes issued under widely differing State systems. On the other hand, the people would be subject to losses, both on circulation and exchange, exactly corresponding to the gains of the banks. In further support of these propositions, the Comptroller ventures to repeat what has been previously stated by him:

“The government, unlike the banks, does not receive deposits nor loan money, and it must therefore provide for the redemption of its notes from its own resources. If it issues a small amount of currency, the amount of reserve required and the expense of redemption will be small; but if it issues the whole paper currency of the country, it must, when specie payments are reached, maintain a ratio of reserve equal to that of the Bank of England or the Bank of France, which is not less in either case than one-third of the amount of its issues. If the amount of government issues should reach 668 millions, which is the present volume of the currency, a reserve of 223 millions in coin must be kept on hand. The interest upon this amount of reserve, at the lowest government rate (4 per cent.), would be \$8,920,000. The expense of issuing the notes and the cost of redemption would also be large, and the total cost to the government, including the hazard attending the issue of so large an amount of money, would not probably be less than 10 millions of dollars annually. This amount is but three millions less than that of the net annual interest received by the national banks upon their bonds, and is much greater than the profits derived by them from their entire circulation.

“If the amount of Treasury notes should be largely increased, and be subject, as it will, to additional increase by each successive Congress, the ability of the government to redeem its issues will in time be questioned, and the amount and proportion of reserve required will need to be increased, thus adding materially to the expense attending such issues, meanwhile saving the government but little, if anything, by the transaction.

“It is believed by the Comptroller that this proposed substitution is impracticable, and that the repeal of the national-bank act will result, not in an additional issue of Treasury notes, but in the repeal of section 3412 of the Revised Statutes, consisting of four lines in the Statute Book, which is as follows:

“‘SEC. 3412. Every National banking association, State bank, or State banking association, shall pay a tax of ten per centum on the amount of notes of any person, or of any State bank or State banking association, used for circulation and paid out by them.’

“The South desires the repeal of this section, because it believes that such repeal will be followed by the organization of numerous banks of circulation under State charters, which will, for the time being, at least, stimulate the business of that section of the country.

“The East and the North, and a portion of the West, in the event of the repeal of the National Banking System, will join with the South in the repeal of this section, but for a different reason, namely, to prevent the increase of the issue of Government notes, because they believe that a system of State bank notes, at the worst, can only injure the credit of individuals, while the unrestricted issue of United States notes will be likely to produce a new suspension of specie payments, and thereby in-

jure, not only every kind of private business, but also the credit of the nation. Those persons in the West who have been erroneously led to believe that the downfall of the National Banking System will be followed by an additional issue of greenbacks, will certainly find upon investigation that State Bank notes, not United States notes, will be almost immediately substituted for the present uniform National currency, accompanied with an increase in the cost of exchange, losses to the bill holders, and other evils which are inseparable from such issues.

"In New York and Massachusetts, Wisconsin, Minnesota, Iowa, and other States, provisions either of law or of the constitution now exist, which prohibit the issue of circulating notes unless secured in a manner similar to those issued under the provisions of the national banking system. As a consequence of these laws and constitutional provisions, the bonds now held in the Treasury at Washington will be largely transferred to the capitals of many of the States, the result being that while, contrary to the expectation of many, no great saving of interest to the government will ensue, the circulating notes of State associations, secured and unsecured, will soon fill the places now occupied by the uniform circulation of the national banks. But even if this circulation shall all be well secured, it will be impossible, under the varying legislation of different States, to secure the issue of a homogeneous currency of equal value throughout the country. Many useful restrictions may be adopted, but it would be hopeless to expect all the States to agree upon a central point of redemption outside of their own respective boundaries, or upon a uniform system of cash reserve, or upon similarity in form of public statements. State lines, as formerly, will bound the field of circulation of many of the Southern and Western issues, while the notes of New York and New England will not only monopolize the field within their own boundaries, but will successfully contest the privilege of circulation in those States remote from the commercial centers, which have no Eastern agency for the redemption of their notes. Eastern communities will suffer comparatively little from the unsound issues of other States, but those which are less favored with capital will, as of old, be the chosen field for the establishment of illegitimate corporations. The cost of exchange, which under the present system has, during the last fifteen years, nearly disappeared, will be again revived. The rate will not, perhaps, be so large as in former times, but yet large enough to be a grievous burden upon the business of the country.

"Few persons have a just conception of the many advantages possessed by a homogeneous currency, fully secured, the issue of a single system, redeemable at a common point, and exempt from the discount occasioned by an irregularity of value in different localities. Great pains have been taken to obtain an estimate of the amount of exchange issued annually upon New York by the Western and Southern States. The amount drawn upon New York alone is estimated at nearly three thousand millions of dollars annually; and it will not probably be an exaggeration to say that not less than four thousand millions of dollars are annually drawn in exchange by the West and South upon the East. The amounts drawn upon each other by the banks in the commercial cities and States of the East is also great. In 1859 the average cost of Southern and Western exchange upon New York was not less than from 1 to 1½ per cent. If this latter rate should be restored, the cost of exchange alone would be sixty millions annually; while if the rate were but one-half of one per cent., which was the current rate in the State of New York in the year 1860, a loss in exchange of twenty millions annually would en-

ing statement presents in one group the figures by which these results are obtained :

The interest at 8 per cent. per annum on the loanable amount of circulation is.....	\$24, 884, 084
The interest on the bonds deposited to secure the circulation when funded into 4 per cents, is	14, 552, 096
Gross amount received by the banks from bonds and loanable circulation.	39, 436, 180
From which deduct one per cent. of the issuable amount of circulation as the tax thereon and the interest on the margin in bonds deposited.....	4, 729, 430
Net income upon the capital employed.....	34, 706, 750
The capital necessary to purchase the bonds pledged by the banks loaned at 8 per cent. per annum would produce.....	29, 722, 656
Difference, representing the profit on circulation if the whole amount available for use be loaned continually throughout the year.....	4, 984, 094

If the rate of interest on loans be taken at six per cent., instead of eight per cent., as above, a like computation shows that the profit on circulation does not exceed 1.7 per cent. on the capital invested. That the advantage to be derived from receiving and issuing circulating notes is not great, is evident from the fact to which the Comptroller has repeatedly called attention that there are in this country 1,005 State banks and 2,634 private bankers who decline to reorganize under the national system. Additional proof is also found in the fact that the amount of existing national-bank circulation is much less than that which under the law these banks might obtain upon their present capital by the deposit of additional bonds. This is shown in the following table:

Geographical divisions.	Capital.	Authorized circulation.	Circulation actually issued to the banks.	Remaining circulation not called for by the banks.
Eastern States.....	\$165, 086, 920	\$140, 418, 781	\$118, 742, 578	\$21, 676, 209
Middle States.....	169, 700, 095	142, 024, 725	115, 701, 970	26, 322, 755
Southern States.....	30, 428, 700	27, 150, 830	24, 028, 460	3, 122, 370
Western States.....	82, 751, 650	73, 220, 485	67, 878, 997	15, 847, 488
Pacific States and Territories.....	6, 100, 000	5, 180, 000	3, 306, 480	1, 883, 520
Totals	454, 067, 365	388, 010, 821	319, 658, 485	68, 352, 336

The total amount of circulation which by law might have been obtained by banks in operation, upon their paid-in capital stock, was on October 2, \$388,010,821, while the amount actually received by them at that date was \$319,658,485; showing that the banks already organized and in operation are entitled to receive \$68,352,336 additional circulation as soon as they see fit to deposit United States bonds to secure it. In other words, these banks already in operation can at any time, if any profit can be made by an additional issue, increase their circulation by more than one-fifth.

Bonds can now be purchased in the market at a small premium, and it is reasonable to suppose that if there were a profit on circulation, the banks now in successful operation, with a capital stock fully paid in, would at once avail themselves of the privilege of receiving and issuing the full proportionate amount allowed by law.

when his attention was called to the large increase of certified checks among the clearing-house exchanges, their amount having risen from 31 millions on April 4, to 44 millions on June 14, to 60 millions on October 2, and finally to more than 90 millions on October 30 last. He was also advised of an informal conference of the presidents of some of the prominent banks, with the object of devising some plan to avoid the risk and loss of such overcertifications. It had also, about the same time, been brought to the knowledge of the Comptroller that certified checks, drawn upon an institution which was known to be largely addicted to this practice, had been refused by banks in good standing; whereupon he considered it his duty to exercise whatever power belonged to his office for the arrest and prevention of the custom complained of. He therefore, on the 29th ultimo, directed the national-bank examiner for the city of New York to examine such banks as were believed to be certifying checks illegally, and to report the facts to this Office; and a separate letter was transmitted to him on the same day requesting him to consult with the clearing-house committee, and to take its advice in reference to the best course to be pursued. The examiner soon after reported that nine of the city banks had at various times certified checks contrary to the provisions of the law, but that only five of them were largely given to the practice; and he added his opinion that the amount of such illegal certifications had been very much overstated by the public press.

A subsequent investigation was made on November 6, which was conducted in such manner as to avoid publicity; and the Comptroller was then advised that the certifications complained of had been very largely reduced in number and amount, and, in the cases of some banks, entirely discontinued, and that it was believed that in a short space of time all the banks would conform fully to the provisions of the statute.

Section 5239 of the Revised Statutes provides that every director of a national bank who participates in or assents to violation of law "shall be held liable in his personal and individual capacity for all damages which the association, its shareholders, or any other person shall have

the association is directly involved in the risks attending this practice. It multiplies excessively the sums which such institutions pass through the clearing-house, and the consequent balances of the exchanges with their associates, which the capital of such banks can never adequately guarantee.

"The most striking commentary upon the dangers of this practice was afforded during the late panic by the dealer of a bank who had largely received such favors, and who, seeing by its application to others that his own checks were in peril, declined, under advice of counsel, to cover them by a deposit, until otherwise assured that the bank could respond to these very obligations.

"No sufficient reason, in the opinion of your committee, can be given why a corporation should place itself without compensation and special security between two parties dealing with each other, and become the guarantor of either, in transactions entirely personal to themselves, simply because one or the other is a depositor in the institution. We have already stated that the safe custody of money payable 'on demand' is full compensation for its legitimate use, and the risks attending such a business are all that properly appertain to the profession of a banker. And if the rule be invariably observed of certifying checks only when the drawer has the full amount at his credit in the bank, no one can be injured or offended when he is treated in all respects like every other of his fellow-dealers. The restriction suggested will work favorably to every interest—to the banks, the shareholders, and their associates—by diminishing the risks now so widely incurred, and it also conforms to and confirms the law which Congress has established upon this subject in respect to national banks.

Your committee, therefore, recommend that in no case shall a check or other obligation be certified by a bank unless the amount of it is first found regularly entered to the credit of the dealer upon the books of the institution."

* The report of the committee, it is said, failed of unanimous adoption by four votes only.

**SPECIE IN BANK AND IN THE TREASURY, AND ESTIMATED AMOUNT IN
THE COUNTRY—SPECIE IN THE BANK OF ENGLAND AND IN THE BANK
OF FRANCE.**

The table below exhibits the amount of specie held by the national banks at the dates of their reports for the last eleven years; the coin, coin-certificates, and checks payable in coin held by the New York City banks being stated separately.

Dates.	Held by national banks in New York City.				Held by other national banks.	Aggregate.
	Coin.	U. S. coin- certificates.	Checks paya- ble in coin.	Total.		
Oct. 5, 1868..	\$1,698,023 24	\$6,390,140	\$1,536,353 66	\$9,625,116 90	\$3,378,596 49	\$13,003,713 39
Jan. 4, 1869..	1,002,760 48	18,038,520	2,348,140 49	22,289,429 97	7,337,320 29	29,626,750 26
Apr. 17, 1869..	1,652,575 21	3,720,040	1,469,826 64	6,842,441 85	3,102,090 30	9,944,532 15
June 12, 1869..	2,542,533 06	11,933,080	1,075,015 82	15,471,229 78	2,083,890 70	18,455,090 48
Oct. 9, 1869..	1,792,740 73	16,897,000	1,013,948 72	19,704,589 45	3,297,816 37	23,002,405 83
Jan. 22, 1870..	6,196,036 29	28,501,460	2,100,044 74	36,888,141 03	11,457,242 69	48,345,383 72
Mar. 24, 1870..	2,647,908 39	21,872,480	1,060,094 30	25,580,482 60	11,507,060 75	37,086,543 44
June 9, 1870..	2,042,400 24	18,660,020	1,163,905 88	22,767,226 12	8,332,211 66	31,099,437 78
Oct. 8, 1870..	1,607,742 91	7,533,900	3,094,006 42	13,135,649 33	5,324,362 14	18,460,011 47
Dec. 28, 1870..	2,268,581 96	14,063,540	3,748,126 87	20,080,248 83	6,227,002 76	26,307,251 59
Mar. 18, 1871..	2,982,153 61	13,099,720	3,829,881 64	19,911,757 25	5,857,409 39	25,769,166 64
Apr. 29, 1871..	2,047,930 71	9,845,080	4,382,107 24	16,275,117 95	6,456,909 07	22,732,027 02
June 10, 1871..	2,240,408 06	9,161,160	3,680,854 92	15,091,422 98	4,833,532 18	19,924,955 16
Oct. 2, 1871..	1,121,869 40	7,590,280	1,163,628 44	9,875,757 84	3,277,240 33	13,252,998 17
Dec. 16, 1871..	1,454,930 73	17,354,740	4,255,631 39	23,065,302 12	6,529,997 44	29,595,299 56
Feb. 27, 1872..	1,490,417 70	12,341,060	3,117,100 00	16,948,578 60	8,559,246 72	25,507,825 32
Apr. 19, 1872..	1,828,650 74	10,102,400	4,715,364 25	16,646,422 99	7,767,475 47	24,413,898 46
June 10, 1872..	3,782,009 64	11,411,160	4,219,419 52	19,414,489 16	4,842,154 98	24,256,644 14
Oct. 3, 1872..	920,707 37	5,454,580	.....	6,375,347 37	3,854,409 42	10,229,756 79
Dec. 27, 1872..	1,306,091 05	12,471,040	.....	13,778,031 05	5,269,305 40	19,047,336 45
Feb. 28, 1873..	1,958,769 88	11,539,780	.....	13,498,549 88	4,279,123 67	17,777,673 53
Apr. 25, 1873..	1,344,950 93	11,743,320	.....	13,088,250 93	3,780,557 81	16,868,808 74
June 13, 1873..	1,442,097 71	22,139,080	.....	23,581,177 71	4,368,909 01	27,950,086 72
Sept. 12, 1873..	1,063,210 55	13,522,600	.....	14,585,810 55	5,282,658 90	19,868,469 45
Dec. 26, 1873..	1,376,170 50	18,325,780	.....	19,701,950 50	7,205,107 08	26,907,057 58
Feb. 27, 1874..	1,167,820 09	23,518,640	.....	24,686,460 09	8,679,403 49	33,365,863 58
May 1, 1874..	1,530,282 10	23,454,660	.....	24,984,942 10	7,585,027 16	32,569,969 26
June 26, 1874..	1,842,525 00	13,671,660	.....	15,514,185 00	6,812,022 27	22,326,207 27
Oct. 2, 1874..	1,291,786 56	13,114,480	.....	14,406,266 56	6,834,678 67	21,240,945 23
Dec. 31, 1874..	1,443,215 42	14,410,940	.....	15,854,155 42	6,582,605 62	22,436,761 04
Mar. 1, 1875..	1,084,555 54	10,622,180	.....	11,706,735 54	4,960,390 63	16,667,106 17
May 1, 1875..	930,105 76	5,733,220	.....	6,663,325 76	3,937,035 88	10,600,361 64
June 30, 1875..	1,023,015 86	12,642,180	.....	13,665,195 86	5,294,386 44	18,959,582 30
Oct. 1, 1875..	753,904 00	4,201,720	.....	4,955,624 00	3,094,704 83	8,050,328 83
Dec. 17, 1875..	869,436 72	12,532,810	.....	13,402,246 72	3,668,659 18	17,070,905 90
Mar. 10, 1876..	3,261,131 36	19,086,920	.....	22,348,051 36	6,729,294 49	29,077,345 85
May 12, 1876..	832,313 70	15,183,780	.....	16,016,093 70	5,698,520 66	21,714,614 36
June 30, 1876..	1,214,522 92	16,872,780	.....	18,087,302 92	7,131,167 00	25,218,469 92
Oct. 2, 1876..	1,129,814 34	13,446,760	.....	14,576,574 34	6,785,079 09	21,361,653 43
Dec. 22, 1876..	1,474,701 83	21,692,900	.....	23,037,601 83	9,962,046 06	32,999,647 89
Jan. 20, 1877..	1,669,284 94	33,629,680	.....	35,298,944 94	14,410,322 61	49,709,267 55
Apr. 14, 1877..	1,930,725 59	13,899,180	.....	15,829,905 59	11,240,132 19	27,070,037 78
June 22, 1877..	1,423,258 17	10,324,320	.....	11,747,578 17	9,588,417 89	21,335,996 06
Oct. 1, 1877..	1,538,486 47	11,469,020	.....	12,948,406 47	9,710,413 84	22,658,820 31
Dec. 28, 1877..	1,955,746 20	19,119,080	.....	21,074,826 20	11,832,924 50	32,907,750 70
Mar. 15, 1878..	2,428,797 44	35,093,220	.....	37,432,017 44	17,390,040 58	54,722,058 02
May 1, 1878..	2,088,092 06	25,397,640	.....	28,085,732 06	17,938,024 00	46,023,756 06
June 29, 1878..	1,905,705 22	11,954,500	.....	13,860,205 22	15,391,264 55	29,251,469 77
Oct. 1, 1878..	1,779,792 43	11,514,810	.....	13,294,602 43	17,394,004 16	30,688,606 59
Dec. 6, 1878..	4,009,999 01	12,277,180	.....	16,286,479 01	18,068,771 35	34,355,250 36
Jan. 1, 1879..	5,421,552 49	12,739,544	.....	18,161,092 49	23,338,664 83	41,499,757 32
Apr. 4, 1879..	5,312,966 90	12,220,940	.....	17,533,906 90	23,614,656 51	41,148,563 41
June 14, 1879..	6,058,472 34	12,291,270	.....	18,349,742 34	23,983,545 10	42,333,287 44
Oct. 2, 1879..	7,218,967 69	12,130,900	.....	19,349,867 69	22,823,873 54	42,173,741 23

The amount of silver coin held by the national banks on October 1, 1877, was \$3,700,703, and on October 1, 1878, \$5,387,738. The amount held on October 2, 1879, was \$4,986,493. The aggregate amount of specie held by the State banks in New England, New York, New Jersey, Pennsylvania, Maryland, Louisiana, Kentucky, Ohio, Iowa and Wisconsin, as shown by their official reports for 1879, was \$1,971,362, of which the banks in New York City held \$1,389,551. In the returns from California the amount of coin is not given separately.

LOANS AND RATE OF INTEREST OF NEW YORK CITY BANKS.

The following table contains a classification of the loans of the national banks in New York City for the last five years:

Loans and discounts.	October 1, 1875.	October 2, 1876.	October 1, 1877.	October 1 st , 1878.	October 2, 1879.
	48 banks.	47 banks.	47 banks.	47 banks.	47 banks.
On endorsed paper.....	\$120,180,537	\$95,510,311	\$92,618,776	\$83,924,333	\$81,520,129
On single-name paper.....	18,555,100	16,634,532	15,800,540	17,297,475	22,491,244
On U. S. bonds on demand.....	4,934,674	6,277,492	4,763,448	7,003,085	8,286,555
On other stock, &c., on demand.....	50,179,384	58,740,574	48,376,033	51,152,021	78,062,083
On real-estate security.....	868,160	538,802	497,524	786,514	670,021
Payable in gold.....	3,454,276	4,681,370	4,319,014	6,752,181	.....
All other loans.....	3,908,602	1,852,044	2,766,456	2,670,371	4,821,216
Totals.....	202,089,738	184,243,225	169,162,391	169,585,980	195,851,902

The average rate of interest in New York City for each of the fiscal years from 1874 to 1879, as ascertained from data derived from the Journal of Commerce and Financial Chronicle, was as follows:

1874, call loans, 3.8 per cent.; commercial paper, 6.4 per cent.
 1875, call loans, 3.0 per cent.; commercial paper, 5.6 per cent.
 1876, call loans, 3.3 per cent.; commercial paper, 5.3 per cent.
 1877, call loans, 3.0 per cent.; commercial paper, 5.2 per cent.
 1878, call loans, 4.4 per cent.; commercial paper, 5.1 per cent.
 1879, call loans, 4.4 per cent.; commercial paper, 4.4 per cent.

The average rate of discount of the Bank of England for the same years was as follows:

During the calendar year ending December 31, 1874, 3.69 per cent.
 During the calendar year ending December 31, 1875, 3.23 per cent.
 During the calendar year ending December 31, 1876, 2.61 per cent.
 During the calendar year ending December 31, 1877, 2.91 per cent.
 During the calendar year ending December 31, 1878, 3.78 per cent.
 During the fiscal year ending June 30, 1879, 3.87 per cent.

The rate of interest in the city of New York on November 25, of the present year, as quoted in the Daily Bulletin, was, on call loans, from 5 to 7 per cent.; and on commercial paper of the best grade, from 5½ to 7 per cent.

The rate of interest of the Bank of England on November 29, 1877, was four per cent. On January 30, 1878, it was two per cent., from which date to October 14, 1878, there were seven changes, and, with a single exception, on May 29, a gradual increase. The rate was fixed at the date last named at six per cent., and reduced on November 21, 1878, to five per cent.; since which time there have been changes in the rate as follows: On January 15, 1879, four per cent.; on the 29th of the same month, three per cent.; on March 12 it was reduced to 2½ per cent., and again on April 9 to two per cent., at which rate it remained until November 7, when it was increased to three per cent., which was also at that time the rate of the Bank of France.

TRANSACTIONS OF THE NEW YORK CLEARING HOUSE.

The New York Clearing House Association is composed of forty-five national and thirteen State banks, and the assistant treasurer of the United States at New York. The exchanges at the Clearing House for

banks paid \$28,180,000 in gold, making the total gold payments for the month \$41,655,000, or a daily average of \$1,581,000—\$1,080,000 by the banks, and \$501,000 by the assistant treasurer.

A table compiled, for purposes of comparison, from returns made to the New York Clearing House, will be found in the appendix, giving the clearings and balances weekly, for the months of September, October and November of various years, from 1869 to 1879.

**NATIONAL-BANK AND LEGAL-TENDER NOTES BY DENOMINATIONS.
CIRCULATING-NOTES OF THE BANK OF FRANCE AND IMPERIAL BANK
OF GERMANY BY DENOMINATIONS.**

The following table exhibits, by denominations, the amount of national-bank and legal-tender notes outstanding on November 1, 1879:

Denominations.	1879.			1878.	1877.
	Amount of national-bank notes.	Amount of legal-tender notes.	Aggregate.	Aggregate.	Aggregate.
Ones	\$3,567,200	\$19,320,302	\$22,887,502	\$24,652,750	\$28,606,915
Twos	2,092,498	18,938,365	21,030,863	22,915,066	20,883,428
Fives	97,911,820	61,611,033	159,522,853	148,116,015	146,444,048
Tens	109,738,240	71,711,318	181,447,558	168,908,071	161,459,711
Twenties	72,652,160	68,793,773	141,445,933	131,785,709	126,290,995
Fifties	21,324,900	24,853,045	46,177,945	47,658,995	52,363,815
One-hundreds	26,911,600	31,428,180	58,339,780	58,331,470	58,976,670
Five-hundreds	641,500	22,446,500	23,088,000	31,159,000	35,956,000
One-thousands	283,000	22,828,500	23,111,500	33,794,500	34,380,500
Five-thousands		3,250,000	3,250,000		
Ten-thousands		2,500,000	2,500,000		
Add for fractions of notes not presented or destroyed	13,586		13,586	11,561	10,800
Totals	335,134,504	347,681,016	682,815,520	667,333,137	671,372,582
Deduct for legal-tender notes destroyed in Chicago fire		1,000,000	1,000,000	1,000,000	1,000,000
Totals	335,134,504	346,681,016	681,815,520	666,333,137	670,372,582

Section 5175 of the Revised Statutes provides that "after specie payments are resumed no association shall be furnished with notes of a less denomination than five dollars." Accordingly no notes of the denominations of one and two dollars have been issued since the first day of January last: The amount of these notes outstanding on the 1st of November, 1878, was \$4,284,219 in ones, and \$2,582,146 in twos. The whole amount of one and two dollar notes outstanding on the 1st of November, 1879, was \$5,659,698, which shows a reduction during the past year of \$1,206,667. The amount of legal-tender notes of these denominations outstanding on the 1st of November, 1878, was \$40,701,451, and the total reduction of ones and twos during the year has been \$2,442,784. Of the entire amount of national-bank and legal-tender notes now outstanding, six per cent. consists of one and two dollar notes; thirty per cent. of ones, twos, and fives; and fifty-six per cent. is in notes of a less denomination than twenty dollars. Of their entire issue, less than twenty-two per cent. in amount is of the denomination of fifty dollars and upwards.

The following table* exhibits by denominations the circulation of the Imperial Bank of Germany on January 1, 1879, in thalers and marks, which have been converted into our currency:

Thalers.				Marks.			
Number of pieces.	Denominations.	Value of each piece in dollars.	Amount in dollars. (Thaler = 75 cents.)	Number of pieces.	Denominations.	Value of each piece in dollars.	Amount in dollars. (Mark = 25 cents.)
194	500 thalers.	375. 00	72, 750	218, 444	1,000 marks.	250	54, 611, 000
2, 517	100 thalers.	75. 00	188, 775	207, 018	500 marks.	125	25, 877, 250
1, 743½	50 thalers.	37. 50	65, 456	3, 395, 050½	100 marks.	25	84, 876, 487
9, 194	25 thalers.	18. 75	172, 888	.....	.....	.....	.....
9, 311½	10 thalers.	7. 50	69, 836	.....	.....	.....	.....
22, 962	.....	.....	569, 205	3, 820, 521½	.....	.....	165, 864, 737

The following table* gives the circulation of the Bank of France and its branches, with the number of pieces, and the denominations in francs and in dollars, on January 30, 1879:

Number of pieces.	Denominations.	Value of each piece in dollars.	Amount in francs.	Amount in dollars. (Fr. = 20 cents.)
5	5, 000 francs.	1, 000	25, 000	5, 000
1, 382, 379	1, 000 francs.	200	1, 382, 379, 000	276, 475, 800
753, 599	500 francs.	100	376, 799, 500	75, 359, 900
3, 087	200 francs.	40	617, 400	123, 480
5, 046, 031	100 francs.	20	504, 003, 100	100, 920, 620
316, 166	50 francs.	10	15, 808, 300	3, 161, 660
29, 525	25 francs.	5	738, 125	147, 625
426, 537	20 francs.	4	8, 530, 740	1, 706, 148
206, 653	5 francs.	1	1, 033, 265	206, 653
1, 245	Forms out of date.	.....	436, 400	87, 280
8, 165, 227	.....	.....	2, 290, 970, 830	458, 194, 166

The amount of circulation of the Bank of France on December 31, 1877, was 2,547,044,000 francs, or say \$509,408,800, showing a reduction between that time and January 30, 1879, the date of the foregoing table, of 256,073,170 francs, or \$51,214,634.

It will be seen that the Imperial Bank of Germany issues no notes of a less denomination than \$7.50, and that the Bank of France issues but about two millions of dollars in notes of a less denomination than five dollars. The Bank of England issues no notes of less than twenty-five dollars, and the Banks of Ireland and Scotland none less than five dollars.

The amount of paper circulation in this country in denominations of less than ten dollars was \$203,441,218 on November 1, 1879. In the foreign countries named a large amount of silver and gold coin of the lower denominations enters into general circulation. If the people of the United States continue to prefer a paper circulation of small notes, and the laws of the country authorize it, it will be impossible to keep in circulation any large amount of silver dollars, or of the smaller denominations of gold coins.

Section 5182 of the Revised Statutes requires that the circulating notes of the national banks shall be signed by the president or vice-

* See pages 788 and 793 of London Bankers' Magazine for September, 1879.

president and the cashier of the association issuing the same. The written signature of at least one bank officer is necessary as a check between this office and the issuing banks; for if an illegal issue should occur the signature of such officer would be a means of determining the genuineness of the note. The written signatures of the officers of the banks are also necessary as an additional precaution against counterfeiting. A number of the banks, however, issue their notes with printed signatures, and in some cases with badly-executed lithographic ones.

Bills have been introduced in Congress imposing a fine of twenty dollars for every circulating note issued by any national bank without the written signature thereon of at least one of its officers; and the Comptroller respectfully repeats his previous recommendation for the passage of such an act, which act shall also impose a fine upon any engraver or lithographer who shall print the signatures of bank officers upon such circulating notes.

LIQUIDATION OF INSOLVENT BANKS.

Since the establishment of the national banking system eighty-one national banks have become insolvent and been placed in the hands of receivers. The following table gives for each State and Territory the number of national banks which have failed since the commencement of the system, a period of sixteen years, with their capital, the amount and percentage of dividends paid to creditors, and the estimated losses. In the States and Territories which do not appear in this table no national banks have failed.

State.	No. of banks.	Capital.	Claims proved.	Dividends paid.	Estimated dividends yet to be paid.	Estimated losses.	Percentage of claims paid.
Vermont	1	\$100,000	\$81,665	\$20,378	\$57,287	\$4,000	25
Connecticut	1	60,000	97,541	82,910	4,631	10,000	85
New York	17	4,176,100	5,890,653	5,298,097	325,025	272,631	89.86
Pennsylvania	10	1,449,500	2,106,622	1,069,539	517,183	521,800	50.72
Dist. of Columbia ..	3	830,000	2,123,303	1,501,998	106,635	424,670	70.74
Virginia	4	900,000	1,447,673	677,940	66,159	703,574	46.63
Alabama	1	100,000	201,308	122,349	.....	168,959	42
Mississippi	1	50,000	53,632	11,771	.....	21,861	35
Louisiana	3	1,600,000	2,961,554	1,989,637	68,817	922,000	66.74
Texas	1	50,000	74,406	7,307	7,099	60,000	10
Arkansas	1	50,000	15,142	15,142	.....	.....	100
Tennessee	1	100,000	376,933	65,335	.....	211,597	17.33
Missouri	6	3,250,000	2,786,850	1,831,681	620,169	335,000	65.73
Ohio	3	250,000	382,187	215,446	18,625	159,056	56.28
Indiana	5	332,000	525,785	277,966	86,819	161,070	52.87
Illinois	9	2,750,000	3,823,368	1,972,498	358,672	1,497,196	57.50
Wisconsin	1	50,000	134,445	47,055	17,390	70,000	35
Iowa	3	180,000	311,190	182,311	33,881	94,908	58.3
Minnesota	2	200,000	318,048	218,275	52,773	40,000	68
Kansas	3	200,000	169,458	80,688	18,169	70,401	48
Colorado	2	225,000	389,997	52,818	169,181	168,000	13.54
Utah	1	150,000	86,200	21,756	.....	67,444	24.40
Nevada	1	250,000	170,012	153,012	.....	17,000	90
Montana	2	150,000	225,651	60,116	36,685	135,000	26.64
Total	81	17,452,600	24,859,472	15,975,223	2,044,060	6,240,189	64.3

There is no means of definitely determining the amount of losses sustained through the failures of banks operating under systems in vogue during the earlier periods of the history of this country. The losses under those systems, both to the note holders, to whom there can be no loss under the national system, and to their general creditors and shareholders, are known to have been large. The loss to noteholders alone is estimated to have been 5 per cent. annually upon the total amount of circulation outstanding. In Elliot's Funding System, on page 1176, it

is stated that fifty-five banks with an aggregate capital of \$67,036,265, and circulation of \$23,577,752, failed in 1841. The total bank capital of that year is stated by the same authority to have been \$317,642,692, and the circulation at \$121,665,198; and it is also stated in the same connection that in nearly every instance the entire capital of the banks which failed was lost.

Numerous failures of private banking firms have occurred in this country within the last six years, and the losses consequent upon three or four of them are equal to the total losses which have occurred under the national system.

For the purpose of comparing the losses to creditors of insolvent national banks with those sustained by the creditors of insolvent banks other than national, much pains have been taken by the Comptroller to obtain as reliable and complete statistics as possible relating to the failures of State and savings-banks and private bankers in the different States during the three years ending January 1, 1879. The results of his labors in this direction are to be found in the following table:

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The amount of claims of five banks in Missouri, one in Kansas, and two in Nebraska could not be obtained.

In the foregoing table it has been found impossible to give the capital, or the exact amount of dividends paid to creditors, the liabilities and the losses only having been ascertained with any degree of accuracy. The differences between the two items last named represent the amount which it is assumed will eventually be paid to creditors. The average annual loss sustained by creditors during the past sixteen years by the insolvency of national banks throughout the United States, has been \$390,012, and that occasioned by the failures of banks other than national, as shown by the incomplete data obtained by the Comptroller, has for the last three years been not less than \$10,872,220.

In the States of Ohio and Illinois alone the losses during the last three years, through the failure of State, savings, and private banks and bankers, aggregated \$8,039,102, of which \$1,916,050 were in Ohio, and \$6,123,052 in Illinois. The total loss in these two States is greater by \$1,798,913 than the total loss to creditors by all the national bank failures which have ever occurred.

In the next table the losses to creditors through the failures of national banks in the cities of New York and Brooklyn, since the establishment of the system, are contrasted with those sustained through the insolvency of savings-banks in the same cities during the last eight years alone, with the names of the banks and the dates of the appointment of receivers:

NATIONAL BANKS.

Name of bank.	Date of appointment of receiver.	Liabilities.	Dividends paid.	Estimated future dividends.	Estimated losses.
Farmers and Citizens' National Bank.	Sept. 6, 1867	\$1,181,197	\$1,138,732	.....	\$42,465
Croton National Bank.	Oct. 1, 1867	164,834	145,878	.....	18,956
Ocean National Bank.	Dec. 13, 1871	1,282,254	1,282,254	.....	.....
Union Square National Bank.	Dec. 15, 1871	157,120	187,120	.....	.....
Eighth National Bank.	Dec. 15, 1871	263,541	263,541	.....	.....
Atlantic National Bank.	Apr. 23, 1873	574,512	524,116	\$20,396	30,000
National Bank of Commonwealth.	Sept. 23, 1873	776,798	776,778	.....	.....
Totals for national banks	.....	4,400,256	4,289,439	20,396	91,421

SAVINGS-BANKS.

Abingdon Square Savings Bank.	Aug. 28, 1876	\$87,897	\$25,930	\$10,560	\$51,507
Bond Street Savings Bank.	Sept. 26, 1876	1,284,894	881,334	128,489	275,071
Bowling Green Savings Bank.	Nov. 20, 1876	514,299	180,005	.....	334,295
Clairmont Savings Bank.	Sept. —, 1877	102,545	.....	.....	102,545
Clinton Savings Bank.	July 17, 1877	67,885	16,971	23,190	21,723
Central Park Savings Bank.	Nov. 30, 1875	40,888	.....	.....	40,888
German Savings Bank of Morrisania.	July 15, 1877	227,779	56,945	125,279	45,556
German Uptown Savings Bank.	Dec. 7, 1875	889,088	529,157	4,300	355,631
Guardian Savings Bank.	Nov. 17, 1871	561,652	533,569	28,082	.....
Long Island Savings Bank of Brooklyn.	Sept. 14, 1877	857,478	617,740	.....	239,738
Market Savings Bank.	Jan. 20, 1872	977,364	371,398	.....	605,966
Mechanics' and Traders' Savings Bank.	July 13, 1876	1,453,016	1,032,281	72,696	348,940
Mutual Benefit Savings Bank.	Nov. 28, 1875	437,496	253,747	21,874	161,876
New Amsterdam Savings Bank.	Sept. 29, 1876	511,992	391,830	.....	120,162
Oriental Savings Bank.	Dec. 19, 1877	182,278	54,683	54,683	72,911
People's Savings Bank.	Nov. 30, 1875	200,288	86,792	.....	113,497
Security Savings Bank.	June 28, 1876	395,518	223,082	15,821	156,615
Six Penny Savings Bank.	Mar. 29, 1878	1,783,408	1,158,965	356,682	267,762
Teutonia Savings Bank.	Apr. 26, 1878	881,000	440,500	396,450	44,050
Third Avenue Savings Bank.	Oct. —, 1875	1,396,138	209,471	139,614	1,047,054
Traders' Savings Bank.	Nov. —, 1876	79,114	11,867	.....	67,247
Yorkville Savings Bank.	June 24, 1877	20,027	.....	18,000	2,027
Totals for savings-banks	.....	12,953,048	7,076,267	1,401,720	4,475,061

The total losses by savings-banks in New York City for eight years, as shown by the above table, the data for which, in reference to savings-banks, were obtained from the report for 1879 of the superintendent or the banking department of the State of New York, have been \$4,475,061, and those by national banks in the same city for sixteen years, \$91,000.*

Some inquiry has been made in reference to the expense of liquidating the affairs of national banks through the agency of receivers, an impression having prevailed that these expenses usually exhaust a large proportion of the assets. The following table has therefore been prepared, which shows by States and Territories the cost of the receiverships of insolvent national banks up to November 1 of the present year,

* Data supplied by Dun, Barlow & Co., with reference to the failures in New York City of trust companies, State and savings-banks, private banking firms, and stock and money brokers, show failures since September, 1873, numbering 191. The aggregate liabilities reported in these cases were \$74,704,478, and the aggregate assets \$49,974,054, the excess of liabilities over assets being \$24,730,424.

in the form of percentages of the total expenses to the amount of money collected:

If that portion of the amount realized from the sale of United States bonds which was necessary to redeem the circulation be omitted from the item of cash collected, the total expense of the liquidation of insolvent banks would be at the rate of 9.73 per cent.

A great many offsets are allowed by the receivers, in cases where parties having credits on the books of the bank are also indebted to it. Bad and doubtful assets are frequently compounded, or are exchanged for proved claims against the bank, under order of the court as provided by law. The cost of these operations is included in expenses in the foregoing table, but the sums thus liquidated do not appear in the amount of net cash collected.

Below is given a table showing the expense of liquidating the affairs of each insolvent national bank in the city of New York:

Name of bank.	Capital.	Total net cash collected.	Receiver's salary.	Legal expenses.	Other expenses.	Total expenses.	Per cent. of total expenses to total cash collected.	Per cent. paid to creditors.
Croton National Bank.....	\$300,000	\$374,009	\$22,500	\$17,242	\$8,368	\$48,109	12.8	88.5
Ocean National Bank.....	1,000,000	2,341,819	85,730	72,837	85,320	193,888	8.3	100
Union Square National Bank.....	200,000	242,544	10,000	4,831	580	15,410	6.3	100
Eighth National Bank.....	250,000	346,142	20,536	9,435	9,235	39,206	7.2	100
Atlantic National Bank.....	300,000	782,992	17,140	22,739	27,250	67,129	8.5	90
National Bank of Commonwealth.....	750,000	1,297,543	83,817	13,637	20,797	118,251	9.1	100
	2,700,000	6,585,049	189,720	140,721	101,551	432,001	7.6	98

A large portion of the expense incident to the receiverships of insolvent banks usually arises from litigation. Many persons who punctually pay their obligations to a bank which is in operation, do so only at the end of a lawsuit when the same bank has been placed in the hands of a receiver. Complicated questions arise in the enforced settlement of a bank's affairs, which are frequently carried up to the court of last resort before they are finally determined. The time necessary to the final closing of an insolvent bank being thus extended, the expenses of the receiverships are increased. In the case of national banks, however, these expenses are reduced as much as possible, by decreasing the salaries of the receivers and their assistants as the business of settlement of their affairs diminishes.

Although the expense attendant upon the liquidation of the affairs of insolvent national banks appears, in some instances, to be large, yet it is believed that the cost of receiverships under the national system is very much less than that usually incurred in the liquidation of insolvent estates and corporations under the laws of the different States.

NATIONAL BANK FAILURES.

Since November 1, 1878, receivers have been appointed for banks in operation at that date as follows:

	Capital.
First National Bank, Warrensburg, Mo	\$100,000
German-American National Bank, Washington, D. C	130,000
Commercial National Bank, Saratoga Springs, N. Y	100,000
National Bank, Poultney, Vt	100,000
First National Bank, Monticello, Ind	50,000
First National Bank, Butler, Pa	50,000
	<hr/> 530,000

Receivers have also been appointed for the German National Bank of Chicago, Ill., and for the Second National Bank of Scranton, Pa., both of which banks had previously gone into voluntary liquidation. This action was rendered necessary by complaints received that the affairs of these associations were not being properly managed by the officers or agents having them in charge, and the appointments were made under authority of the act of June 30, 1876.

Dividends have been paid to the creditors of six of the banks which have failed since November 1, 1878, as follows:

First National Bank of Warrensburg, Mo	10 per cent.
German-American National Bank, Washington, D. C	10 per cent.
German National Bank, Chicago, Ill	25 per cent.
Commercial National Bank, Saratoga Springs, N. Y	60 per cent.
National Bank of Poultney, Vt	25 per cent.
First National Bank of Butler, Pa	15 per cent.

The aggregate amount of these dividends is \$187,752.83, and their average per cent. to claims proved is 22.66.

Dividends have also been paid to the creditors of banks which had failed prior to November 1, 1878, as follows:

First National Bank, New Orleans, La .....	.5 per cent. ; total, 70 per cent.
Ocean National Bank, New York City .....	.5 per cent. ; total, 100 per cent.
Crescent City National Bank, New Orleans, La .....	.5 per cent. ; total, 80 per cent.
Atlantic National Bank, New York City .....	.5 per cent. ; total, 90 per cent.

First National Bank Utah, Salt Lake City, Utah	9.4 per cent. ; total, 24.4 per cent.
First National Bank, Tiffin, Ohio	19 per cent. ; total, 66 per cent.
Charlottesville National Bank, Charlottesville, Va.	10 per cent. ; total, 40 per cent.
City National Bank, Chicago, Ill.	25 per cent. ; total, 70 per cent.
National Bank, Fishkill, N. Y.	10 per cent. ; total, 55 per cent.
First National Bank, Franklin, Ind.	20 per cent. ; total, 65 per cent.
Northumberland County National Bank, Shamokin, Pa.	12½ per cent. ; total, 62½ per cent.
First National Bank, Winchester, Ill.	10 per cent. ; total, 60 per cent.
National Exchange Bank, Minneapolis, Minn.	10 per cent. ; total, 75 per cent.
National Bank State Missouri, Saint Louis, Mo.	35 per cent. ; total, 70 per cent.
First National Bank, Delphi, Ind.	10 per cent. ; total, 60 per cent.
First National Bank, Georgetown, Colo.	12½ per cent. ; total, 12½ per cent.
Lock Haven National Bank, Lock Haven, Pa.	30 per cent. ; total, 60 per cent.
Third National Bank, Chicago, Ill.	20 per cent. ; total, 90 per cent.
Central National Bank, Chicago, Ill.	15 per cent. ; total, 55 per cent.
First National Bank, Ashland, Pa.	100 per cent. ; total, 100 per cent.
First National Bank, Tarrytown, N. Y.	10 per cent. ; total, 80 per cent.
First National Bank, Allentown, Pa.	50 per cent. ; total, 50 per cent.
First National Bank, Waynesburg, Pa.	40 per cent. ; total, 40 per cent.
Washington County National Bank, Greenwich, N. Y.	50 per cent. ; total, 100 per cent.
First National Bank, Dallas, Tex.	10 per cent. ; total, 10 per cent.
People's National Bank, Helena, Mont.	15 per cent. ; total, 15 per cent.
First National Bank, Bozeman, Mont.	40 per cent. ; total, 40 per cent.
Merchants' National Bank, Fort Scott, Kans.	15 per cent. ; total, 15 per cent.
Farmers' National Bank, Platte City, Mo.	100 per cent. ; total, 100 per cent.

The total amount of dividends paid by the Comptroller to creditors of insolvent national banks during the year ending November 1, 1879, was \$1,909,595. The total dividends paid since the organization of the system is \$15,919,908, upon proved claims amounting to \$24,913,496. The dividends paid equal 64.16 per cent. of the amount of the claims.

Assessments amounting to \$6,320,250 have been made upon the shareholders of insolvent banks, for the purpose of enforcing their individual liability, of which amount \$1,816,007.82 has been collected in all, and \$357,173.82 of it during the past year.

A table showing the national banks which have been placed in the hands of receivers, the amount of their capital and of claims proved, and the rates of dividends paid, and also one showing the amount of circulation of such banks, issued, redeemed, and outstanding, will be found in the appendix.

THE LOSSES OF THE BANKS.

It is the practice of this office, under the law providing that reports shall be made by the national banks and published by them in such form as the Comptroller may require, to insist that all the assets of these associations shall appear in such reports at their real value, as nearly as such value can be determined, in order that the general public may not be deceived thereby.

To show the real state of facts in this respect, it is necessary that all losses and depreciations in values shall, as often at least as once in each six months, be charged to the profits of the bank. Where this rule is strictly followed, and dividends are determined in all cases by the remaining profits only, there is little danger of insolvency; since in most cases which have heretofore occurred the causes of insolvency can be traced to the accumulated losses of a long series of years, and the continuance of dividends regardless of such losses. The losses charged off semi-annually by national banks in the years 1876, 1877 and 1878, have been given, by States and reserve cities, in previous reports. The fol-

lowing table, similarly arranged, shows the number of banks which have charged off losses, and the amount of losses charged off by them, in each of the two periods of six months ending on March 1 and September 1, 1879, together with the total amount for the year; to which have been added the amounts charged off in each of the three preceding years:

States and Territories.	March 1, 1879.		September 1, 1879.		Total losses.
	No. of banks.	Losses.	No. of banks.	Losses.	
Maine.....	43	\$154,523 16	42	\$137,930 13	\$292,453 29
New Hampshire.....	27	52,749 00	28	103,734 00	156,483 00
Vermont.....	28	150,439 05	35	144,053 70	303,493 65
Massachusetts.....	134	1,155,600 64	141	972,937 54	2,128,538 18
Boston.....	50	1,284,879 30	45	1,370,511 28	2,655,390 58
Rhode Island.....	39	251,752 05	32	171,501 46	523,253 61
Connecticut.....	58	433,183 19	61	487,725 04	940,909 13
New York.....	145	677,580 82	150	821,412 49	1,499,002 31
New York City.....	41	1,148,856 07	40	1,086,700 70	2,235,557 77
Albany.....	6	115,339 99	7	116,631 57	232,170 56
New Jersey.....	55	389,108 80	50	307,204 83	690,313 72
Pennsylvania.....	140	579,140 70	142	563,256 39	1,142,397 09
Philadelphia.....	26	183,174 86	25	308,383 60	491,558 36
Pittsburgh.....	18	179,258 88	19	153,764 11	333,023 00
Delaware.....	5	4,211 79	0	8,981 52	13,193 31
Maryland.....	6	31,006 79	9	85,946 95	66,953 74
Baltimore.....	12	265,236 89	10	29,270 11	294,507 00
District of Columbia.....	1	749 76	0	.....	749 76
Washington.....	4	25,276 11	5	28,687 32	53,963 43
Virginia.....	15	43,832 73	16	116,071 48	159,924 21
West Virginia.....	7	36,228 42	5	14,109 20	50,337 62
North Carolina.....	8	14,680 74	9	62,636 18	77,616 92
South Carolina.....	8	50,477 56	10	260,719 11	311,196 67
Georgia.....	7	23,595 05	10	65,764 06	89,359 71
Florida.....	1	10 43	1	530 68	541 11
Alabama.....	7	26,404 19	9	86,396 85	62,801 04
New Orleans.....	7	150,923 53	7	121,066 34	272,889 87
Texas.....	7	7,232 08	11	136,785 73	144,018 71
Arkansas.....	2	15,297 04	2	4,409 07	19,706 11
Kentucky.....	30	231,871 47	32	145,860 62	377,732 09
Louisville.....	8	57,120 44	8	184,594 91	241,715 26
Tennessee.....	18	38,651 83	19	85,939 52	124,591 35
Ohio.....	101	490,395 44	97	430,594 57	920,990 01
Cincinnati.....	3	50,869 56	4	45,297 04	96,166 60
Cleveland.....	5	08,418 54	6	85,689 36	154,107 90
Indiana.....	57	295,417 17	59	534,523 79	829,940 96
Illinois.....	79	400,288 05	79	257,646 75	723,932 80
Chicago.....	8	153,296 24	8	140,165 23	293,461 47
Michigan.....	57	175,849 41	52	245,081 99	420,931 40
Detroit.....	4	84,908 36	4	14,832 27	99,740 63
Wisconsin.....	12	20,723 59	16	50,801 50	71,525 09
Milwaukee.....	3	38,508 11	3	25,744 91	64,253 02
Iowa.....	43	125,870 78	45	116,743 20	242,613 98
Minnesota.....	24	99,821 96	23	96,841 75	196,163 71
Missouri.....	11	32,261 99	10	30,311 86	62,573 85
Saint Louis.....	3	12,346 11	5	146,611 30	158,957 41
Kansas.....	10	29,302 49	10	58,215 78	87,518 27
Nebraska.....	10	83,121 63	2	25,454 00	58,575 63
Colorado.....	10	41,785 02	8	58,182 43	99,968 05
Oregon.....	1	12,130 04	1	4,881 41	17,012 05
California.....	5	10,517 83	5	29,155 79	39,673 62
San Francisco.....	2	70,250 91	2	39,543 30	109,794 21
New Mexico.....	2	5,808 61	2	19,506 26	25,404 87
Utah.....	1	5,023 00	0	.....	5,023 00
Montana.....	3	5,251 93	2	5,340 16	10,592 09
Wyoming.....	1	2,843 72	2	37,090 38	40,534 10
Dakota.....	2	5,721 73	3	8,975 36	9,697 09
Washington.....	1	868 81	1	291 89	1,160 70
Totals for 1879.....	1,421	10,238,324 08	1,442	11,487,330 17	21,725,655 15
Add for 1878.....	1,304	10,903,145 04	1,430	13,563,654 85	24,466,799 89
Add for 1877.....	980	8,175,060 56	1,108	11,757,627 43	19,933,587 99
Add for 1876.....	806	6,501,169 82	1,034	13,217,856 60	19,719,026 42
Aggregate losses for four years.....	.....	35,818,600 40	.....	50,026,469 05	85,845,069 45

In the following table the total losses charged off in each geographical division of the country during the last four years are shown, with the number of banks reporting the losses:

Six months ending—	New England States.		Middle States.		Southern States.		Western States and Territories.		United States.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
March 1, 1876	201	\$1,485,532	268	\$3,553,129	67	\$308,861	270	\$1,153,648	806	\$6,501,170
September 1, 1876 ..	282	3,074,128	344	7,156,349	90	896,891	318	2,090,489	1,034	13,217,857
Total, 1876 .....	.....	4,559,660	.....	10,709,478	.....	1,205,752	.....	3,244,137	.....	19,719,027
March 1, 1877	289	2,465,328	314	3,462,684	80	478,252	297	1,769,697	980	8,175,961
September 1, 1877 ..	312	4,825,040	353	3,945,806	86	511,841	357	2,474,940	1,108	11,757,627
Total, 1877 .....	.....	7,290,368	.....	7,408,490	.....	990,093	.....	4,244,637	.....	19,933,588
March 1, 1878	327	3,344,012	417	4,506,813	124	672,032	436	2,380,288	1,304	10,903,145
September 1, 1878 ..	399	4,016,814	449	5,502,770	140	1,225,602	442	2,818,469	1,430	13,563,656
Total, 1878 .....	.....	7,360,826	.....	10,009,583	.....	1,897,634	.....	5,198,757	.....	24,466,800
March 1, 1879	379	3,612,128	459	3,592,950	125	696,646	458	2,336,000	1,421	10,238,324
September 1, 1879 ..	384	3,388,394	463	4,360,440	139	1,235,784	456	2,502,712	1,442	11,487,330
Total, 1879 .....	.....	7,000,522	.....	7,953,390	.....	1,932,430	.....	4,839,312	.....	21,725,654
Total for 4 years .....	.....	26,211,376	.....	36,080,941	.....	6,025,909	.....	17,526,843	.....	85,845,069

It will be seen from the foregoing table that the total losses charged off by the banks during the current year were \$21,725,654, that in 1878 they amounted to \$24,466,800, in 1877 to \$19,933,588, and in 1876 to \$19,719,027; making a grand aggregate of \$85,845,069 of losses which the banks have sustained during the four years named. Of the \$57,950,081 of losses charged off within the last two and a half years, \$8,639,407 was on account of depreciation in the premium on the United States bonds held by the banks. The total losses thus charged off during the last four years are more than 19 per cent. of the entire capital of the banks.

The amount of losses sustained in the several principal cities of the United States is shown in the following table:

Cities.	1876.	1877.	1878.	1879.	Total.
New York	\$6,873,759 97	\$4,247,941 66	\$5,147,319 98	\$3,135,557 37	\$19,404,578 98
Boston	1,598,722 68	2,192,053 81	2,490,197 46	2,655,390 58	8,936,364 53
Philadelphia	152,976 14	333,248 47	561,676 30	491,558 36	1,539,459 27
Pittsburg	333,851 56	280,466 59	419,036 51	333,022 99	1,375,377 65
Baltimore	876,207 32	200,597 74	368,915 99	204,507 00	1,740,228 05
New Orleans	519,701 41	286,259 47	338,496 90	272,889 87	1,417,347 65

These losses have, to a considerable extent, been charged to the current profits of the banks—that is, to the profits of the semi-annual periods in which the losses occurred. In some cases, however, where the losses were large, they have been partly met from the accumulated profits of the banks, including the legal surplus; and in extreme cases they have been met, either by assessment upon the shareholders, or by a reduction of the capital stock under section 5143 of the Revised Statutes.

It will be seen from the above that the national banks have not escaped the effects of the general depression which, since 1873, has affected all branches of trade and industry in the country, and this will still more plainly appear in the paragraphs and tables which follow, relating to surplus and dividends.

SURPLUS.

In addition to the paid-up capital which each national bank must have, and which must be kept always unimpaired, there is also the surplus fund, which the law provides shall be accumulated by setting aside, before the usual semi-annual dividend is declared, one-tenth part of the semi-annual net profits of the bank. In course of time this legal surplus becomes working capital, in the case of many banks largely exceeding their nominal capital. The capital and surplus together form the working fund of a bank, each contributing *pro rata* to its ultimate profits; and the banks which make large dividends in proportion to their capital are those which have accumulated a large surplus, such dividends being really earned by their combined capital and surplus.

The following table shows the growth of surplus from the commencement of the system to the present time, as nearly as possible by semi-annual periods, with the increase or decrease for each period :

Dates.	Surplus.		Dates.	Surplus.	
	Amount.	Semi-annual increase or decrease.		Amount.	Semi-annual increase or decrease.
July 4, 1864	\$1,120,910	<i>Increase.</i>	June 10, 1872	\$105,181,943	<i>Increase.</i>
January 2, 1865	8,603,311	\$7,533,401	December 27, 1872	111,410,249	\$3,608,789
July 3, 1865	31,303,506	22,640,255	June 13, 1873	116,847,455	6,228,306
January 1, 1866	43,000,371	11,696,805	December 26, 1873	120,901,268	5,437,206
July 2, 1866	50,151,992	7,151,621	June 26, 1874	128,239,308	4,113,813
January 7, 1867	59,092,875	9,840,883	December 31, 1874	130,485,641	5,278,040
July 1, 1867	63,232,811	3,239,936	June 30, 1875	133,169,095	4,946,333
January 6, 1868	70,566,120	7,253,315	December 17, 1875	133,085,422	2,683,454
July 6, 1868	75,840,119	5,253,993	June 30, 1876	131,897,197	<i>Decrease.</i>
January 4, 1869	81,169,937	5,329,818	December 22, 1876	131,390,665	\$82,673
June 12, 1869	82,218,576	1,048,639	June 21, 1877	124,714,073	1,188,225
January 22, 1870	90,174,281	7,955,705	December 28, 1877	121,568,455	506,532
June 9, 1870	91,689,834	1,515,553	June 29, 1878	118,178,531	6,676,592
December 28, 1870	94,705,740	3,015,906	January 1, 1879	116,209,864	3,145,618
June 10, 1871	98,322,204	3,616,464	June 14, 1879	114,321,376	3,389,924
December 10, 1871	101,573,154	3,250,950			1,977,667
					1,879,488

The total surplus fund, which up to June, 1875, had from the beginning shown a constant increase, during the six months next following first began to show a decrease; while each semi-annual period since the latter date has exhibited a still diminishing surplus, thus in some measure indicating how severely the national banks have felt the business inactivity and depression of the past six years.

DIVIDENDS.

Since the year 1869 the banks have been required to make semi-annual reports of their dividends and earnings. From these reports tables have been prepared showing the profits and dividends of all the national banks. The latter must, to afford a fair view of the subject, be considered in their relation, not alone to capital, but to capital and surplus combined; since, in reality, the latter contributes proportionately as much to the semi-annual profits from which the dividends are derived as does the former.

In the appendix is given a table which shows in a concise form the ratio of dividends to capital, and of dividends to the united capital and surplus, and also the ratio of the total net earnings to capital and surplus, of the national banks in each State and principal city in the Union, for each half-year from March 1, 1875, to September 1, 1879.

The following table shows the capital, surplus, dividends, and total earnings of all the national banks, for each half-year from March 1, 1869, to September 1, 1879, together with the ratio of dividends and earnings to capital, and to combined capital and surplus:

This table shows that there has been a steady falling off in the rate of earnings since 1870. In that year the ratio of dividends to capital was 10.12 per cent. while this year it is but 7.60 per cent. In the former year the ratio of dividends to capital and surplus was 8.35 per cent. while now it is 6.07 per cent. only; and since the date mentioned the ratio of earnings to capital and surplus has fallen from 10.96 per cent. to 5.49 per cent.

This marked decline is directly attributable to the losses sustained by the banks, in consequence of which many of them have declared no dividends at all, while others, though declaring dividends, have reduced them to a rate far below the average legal rates of interest.

The following tabular statement shows by geographical divisions the number of national banks, with their capital, which have paid no dividends to their stockholders during the semi-annual periods of 1878 and 1879 respectively, together with the totals of each semi-annual period for the three preceding years:

Geographical divisions.	Six months ending—				Average for the year.	
	March 1, 1879.		September 1, 1879.			
	No. of banks.	Capital.	No. of banks.	Capital.	No. of banks.	Capital.
New England States	46	\$16,135,700	42	\$15,030,000	44	\$15,577,850
Middle States	99	17,891,000	91	12,920,300	95	15,382,150
Southern States	82	6,751,000	41	5,254,000	37	5,502,600
Western States and Territories	132	14,133,000	125	11,382,000	128	12,767,500
Totals for 1879	259	53,843,700	299	44,576,300	304	49,210,000
Totals for 1878	328	48,797,000	357	58,736,950	343	53,707,425
Totals for 1877	245	40,452,000	288	41,160,500	266	40,809,100
Totals for 1876	235	34,200,320	273	44,057,725	254	39,174,022
Average for four years	279	44,345,980	304	47,126,294	292	45,740,187

The number of banks passing dividends in the first dividend period of 1879 was 309, with a total capital of \$53,843,700; in the second period the number was 299, with a capital of \$44,576,300; while during the last four years the average number of banks semi-annually passing dividends on account of losses has been 292. The average amount of capital upon which no dividends have been paid during that time is \$45,740,137; from which it follows that for a continuous period of four years about one-seventh of the whole number of banks in operation have paid no dividends, and that more than one-tenth of the total capital has been unremunerative.

The percentage to capital of dividends paid, and of dividends and earnings to combined capital and surplus, is given by similar divisions in the following table, for the years 1877, 1878, and 1879:

Geographical divisions.	1877.			1878.			1879.		
	Divi- dends to capital.	Divi- dends to capital and sur- plus.	Earnings to capital and sur- plus.	Divi- dends to capital.	Divi- dends to capital and sur- plus.	Earnings to capital and sur- plus.	Divi- dends to capital.	Divi- dends to capital and sur- plus.	Earnings to capital and sur- plus.
	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
New England States	7.6	6.0	4.7	6.9	5.5	4.3	6.4	5.2	4.2
Middle States...	8.5	6.6	5.4	7.9	6.1	4.9	7.9	6.1	5.8
Southern States	8.3	7.1	7.1	7.3	6.2	5.7	7.0	6.0	5.4
Western States and Territo- ries	12.2	9.6	7.2	9.6	7.8	6.9	9.4	7.5	7.1
United States...	8.9	7.1	5.6	7.8	6.2	5.1	7.6	6.1	5.5

The three subjects of losses, surplus, and dividends are, it will be perceived, intimately connected one with another. The large losses, the depleted surplus, and the diminished dividends of the national banks all point to the conclusion that these institutions cannot longer continue to pay the heavy rates of taxation imposed upon them alike by the States and by the General Government, and at the same time adequately remunerate their shareholders for the use of their capital.

TAXATION.

The Comptroller respectfully calls the attention of Congress to the subject of taxation of the circulation, capital and deposits of the national banks, and again recommends the repeal of the tax upon their capital and deposits. The reasons which induce this recommendation are given at length in his report for 1877. It is important to be considered that this tax originated as a war measure. At the time it was imposed it was deemed expedient, in order to meet an extraordinary emergency, to lay even the necessities of life under contribution to sustain the government. All taxes thus imposed upon these necessities have since then been repealed, and the internal revenue of the government, with the exception of that arising from the tax on banking capital and deposits, is now derived from imposts on spirits, tobacco, matches, patent medicines and fermented liquors. Even the tax on tea and coffee, which are admitted luxuries, has been removed. Banking capital, one of the necessities of trade and commerce, is thus put on a footing with what are generally considered the least indispensable luxuries.

Table of Taxes, &c.—Continued.

States and Territories.	Capital.	Amount of taxes.			Ratios to capital.		
		United States.	State.	Total.	U. S.	State.	Total.
					Per ct.	Per ct.	Per ct.
Ohio.....	\$18,903,637	\$254,030	\$399,062	\$644,092	1.3	2.1	3.4
Cincinnati.....	4,333,333	65,684	120,832	186,516	1.5	2.7	4.2
Cleveland.....	4,280,130	46,252	80,779	133,031	1.1	2.0	3.1
Indiana.....	15,381,544	194,104	316,918	511,022	1.3	2.1	3.4
Illinois.....	11,319,200	157,543	210,066	368,529	1.4	2.0	3.4
Chicago.....	4,770,166	118,637	106,157	224,794	2.5	2.6	5.1
Michigan.....	7,561,740	90,915	113,231	204,146	1.2	1.5	2.7
Detroit.....	2,100,000	35,105	31,099	66,204	1.7	1.5	3.2
Wisconsin.....	2,690,000	40,748	49,933	90,651	1.5	2.0	3.5
Milwaukee.....	650,000	16,556	17,144	32,700	2.4	2.6	5.0
Iowa.....	6,048,704	81,949	115,504	197,543	1.4	2.1	3.5
Minnesota.....	4,703,131	62,850	92,720	155,570	1.3	2.0	3.3
Missouri.....	1,725,817	24,512	31,967	56,409	1.4	2.5	3.9
Saint Louis.....	2,653,750	44,014	62,748	106,762	1.6	2.4	4.0
Kansas.....	952,320	15,238	21,131	36,369	1.6	2.6	4.2
Nebraska.....	950,000	21,690	23,706	45,396	2.3	2.6	4.9
Colorado.....	1,003,750	24,002	23,168	47,168	2.4	2.4	4.8
Oregon.....	250,000	7,710	2,925	10,635	3.1	1.2	4.3
California*.....	1,550,000	18,547	3,696	22,243	1.2	0.3	1.5
San Francisco*.....	2,750,000	22,570	169	22,739	0.8	0.0	0.8
New Mexico.....	300,000	4,280	5,243	9,523	1.4	1.8	3.2
Utah.....	200,000	2,803	2,750	5,553	1.4	1.4	2.8
Idaho.....	160,000	1,306	3,147	4,543	1.4	3.2	4.6
Montana.....	332,880	6,637	4,588	11,225	2.0	3.1	5.1
Wyoming.....	125,000	2,188	2,636	4,824	1.8	2.1	3.9
Dakota.....	129,124	2,363	672	3,035	1.8	1.3	3.1
Washington.....	111,671	699	.....	699	0.6	0.0	0.6
Western States and Territories.....	95,974,897	1,362,082	1,839,929	3,202,011	1.4	2.0	3.4
Totals.....	471,064,238	6,727,232	8,056,533	14,783,765	1.4	1.7	3.1

* California banks pay no State taxes on capital, except such as is invested in real estate.

It is to be regretted that it has not been possible to obtain the data from which to prepare a table similar to the above, showing the United States and State taxes paid by banks other than national, with their capital and the percentage of tax to capital. In the following table, however, the taxes paid annually to the Commissioner of Internal Revenue by banks other than national, on circulation, on deposits, and on capital, are given from 1864 to 1879:

Years.	On circulation.	On deposits.	On capital.	Totals.
1864.....	\$2,056,996 30	\$780,723 52	.....	\$2,837,719 82
1865.....	1,993,661 84	2,043,841 08	\$908,367 08	4,940,870 00
1866.....	990,278 11	2,090,635 83	374,074 11	3,453,988 05
1867.....	214,298 75	1,355,395 98	476,867 73	2,046,562 46
1868.....	28,639 88	1,438,512 77	390,562 00	1,856,745 55
1869.....	16,565 05	1,734,417 63	445,071 49	2,196,054 17
1870.....	15,419 94	2,177,576 46	827,067 21	3,020,063 61
1871.....	22,781 02	2,702,196 84	919,262 77	3,644,241 53
1872.....	8,919 82	3,643,251 71	976,057 61	4,628,229 14
1873.....	24,778 62	3,009,302 70	736,059 65	3,771,031 46
1874.....	16,738 26	2,453,544 26	916,878 15	3,387,160 67
1875.....	22,746 27	2,972,280 27	1,102,241 58	4,097,248 12
1876.....	17,947 67	2,909,530 75	989,219 61	4,006,698 03
1877.....	5,430 16	2,896,637 93	927,061 24	3,829,729 33
1878.....	1,118 72	2,503,687 50	837,225 84	3,402,031 85
1879.....	13,903 29	2,354,011 74	830,068 50	3,198,883 59
Aggregates.....	5,450,254 60	37,255,426 85	11,721,599 83	54,427,278 28

The rate of taxation imposed on the deposits and capital of State banks and private bankers is precisely the same as that imposed upon national banks. The tax upon their circulation consists chiefly of penalties imposed for its unauthorized issue.

In comparison with the foregoing is placed the following table, showing the taxes paid to the United States by the national banks during the same years:

Years.	On circulation.	On deposits.	On capital.	Totals.
1864.....	\$53,193 32	\$95,911 87	\$18,432 07	\$167,537 26
1865.....	733,247 59	1,087,530 86	133,251 15	1,954,029 60
1866.....	2,106,785 30	2,633,192 77	400,047 74	5,146,025 81
1867.....	2,868,636 78	2,650,180 09	321,881 36	5,840,698 23
1868.....	2,046,343 07	2,564,143 44	306,781 67	5,917,268 18
1869.....	2,957,416 73	2,614,533 58	312,918 68	5,884,869 99
1870.....	2,049,744 13	2,614,767 61	375,062 26	5,040,574 00
1871.....	2,987,021 69	2,802,840 85	385,292 13	6,175,154 67
1872.....	3,193,570 03	3,120,064 37	360,356 27	6,703,910 67
1873.....	3,353,180 13	3,196,569 29	454,801 51	7,004,550 93
1874.....	3,404,483 11	3,309,067 72	469,048 02	7,083,498 85
1875.....	3,283,450 80	3,514,205 39	507,417 76	7,305,124 04
1876.....	3,001,795 76	3,505,129 64	632,290 16	7,229,221 56
1877.....	2,000,057 53	3,451,985 38	600,784 80	7,018,707 81
1878.....	2,948,047 08	3,278,111 74	500,296 83	6,781,455 65
1879.....	3,000,647 10	3,309,668 90	401,020 61	6,721,236 67
Aggregates.....	42,787,326 30	43,644,803 50	6,337,479 12	92,769,609 92

The taxes above shown are those paid under the laws now in force, requiring the national banks to pay semi-annually to the Treasurer of the United States a duty of one-half of one per cent. on the average amount of their circulating-notes outstanding, one-quarter of one per cent. upon the average amount of their deposits, and a like duty upon their capital in excess of the amount invested in United States bonds. It will be seen that the national banks have contributed more than two-thirds of the whole amount of the taxes paid by the banks and bankers of the country, while the cost to the government of the national system since its inauguration in 1863, including the engraving of plates and the printing of circulating-notes, has been but \$4,732,731.

From tables similar to the one first given herein for 1878, showing the amounts of national and State taxes paid by the national banks, the following condensed table has been prepared, which shows the taxes, national and State, paid by the national banks during each year from 1866 to 1878 inclusive. The taxes shown for 1866, 1867, and 1869, and for the years 1874 to 1878, inclusive, are from complete data obtained by this Office, while those given for the year 1868, and from 1870 to 1873, inclusive, are estimated. In the returns of the United States taxes paid prior to 1872, the special or license tax of two dollars on each one thousand dollars of capital, and the income tax on net earnings, are included:

ptal.

total.

per ct.

3.9
4.3
4.3
4.1
4.1
4.1
3.5
3.2
3.5
3.5
3.4
3.3
2.

In order that it may be seen how unequally these United States and State taxes bear on the national banks in different sections of the country, the following tables have been prepared, giving, for the years from 1874 to 1878 inclusive, the capital stock invested, and the percentage thereon of taxes paid, in each of the four geographical divisions of the country:

1874.

Geographical divisions.	Capital.*	Amount of taxes.			Ratios to capital.		
		U. S.	State.	Total.	U. S.	State.	Total.
					<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
New England States.....	\$180,517,266	\$1,896,533	\$2,980,484	\$4,877,017	1.2	1.6	3.0
Middle States	190,162,129	3,325,425	3,911,371	7,236,796	1.7	2.1	3.8
Southern States	83,558,483	456,540	517,792	974,332	1.3	1.5	2.8
Western States and Terr's.	106,513,801	1,597,585	2,210,679	3,808,264	1.5	2.0	3.5
United States	493,751,679	7,256,083	9,620,326	16,876,409	1.5	2.0	3.5

1875.

New England States	\$164,316,333	\$1,937,016	\$3,016,537	\$4,953,553	1.2	1.8	3.0
Middle States	193,585,507	3,300,498	4,062,459	7,362,957	1.7	2.1	3.8
Southern States	84,485,483	445,048	476,236	921,284	1.3	1.4	2.7
Western States and Terr's.	111,300,588	1,634,869	2,502,890	4,137,859	1.5	2.4	3.9
United States	503,687,911	7,317,531	10,058,122	17,375,653	1.5	2.0	3.5

1876.

New England States.....	\$168,068,379	\$1,947,970	\$2,014,808	\$4,862,778	1.2	1.7	2.8
Middle States	192,163,773	3,190,247	4,025,316	7,215,563	1.7	2.2	3.9
Southern States	33,439,193	423,761	431,164	854,945	1.3	1.3	2.6
Western States and Terr's.	108,116,734	1,514,089	2,330,444	3,844,533	1.4	2.3	3.7
United States	501,788,079	7,076,087	9,781,732	16,857,819	1.4	2.0	3.4

1877.

New England States.....	\$167,788,475	\$1,907,776	\$2,864,119	\$4,771,895	1.1	1.7	2.8
Middle States	182,885,562	3,129,990	3,544,862	6,674,852	1.7	1.9	3.6
Southern States	32,212,288	411,486	429,149	840,635	1.3	1.4	2.7
Western States and Terr's.	102,364,369	1,453,321	1,991,174	3,444,495	1.4	2.1	3.5
United States	485,250,694	6,902,573	8,829,304	15,731,877	1.4	1.9	3.3

1878.

New England States.....	\$166,737,594	\$1,900,735	\$2,593,043	\$4,493,778	1.1	1.6	2.7
Middle States	176,768,899	3,054,576	3,217,485	6,272,061	1.7	1.8	3.5
Southern States	31,583,348	409,839	400,076	815,915	1.3	1.3	2.6
Western States and Terr's.	95,974,897	1,362,082	1,839,929	3,202,011	1.4	2.0	3.4
United States	471,064,238	6,727,232	8,056,533	14,783,765	1.4	1.7	3.1

* The capital of the banks which reported State taxes in 1874 was \$476,836,031; in 1875, \$493,738,408 in 1876, \$488,272,782; in 1877, \$474,067,771, and in 1878, \$463,963,724.

This table shows that the heaviest taxes are paid in the Western and Middle States, and the lightest in the Southern and Eastern. The table below shows for three different years the great inequality in the rates of State taxation paid in the principal cities of the country :

Cities.	Rates of taxation.								
	1876.			1877.			1878.		
	United States.	State.	Total.	United States.	State.	Total.	United States.	State.	Total.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Boston	1.4	1.6	3.0	1.3	1.6	2.9	1.3	1.3	2.6
New York	1.9	3.5	5.4	2.1	2.9	5.0	2.2	2.9	5.1
Albany	3.2	3.4	6.6	3.0	3.2	6.2	2.8	2.8	5.6
Philadelphia	2.1	0.7	2.8	2.1	0.7	2.8	2.0	0.7	2.7
Pittsburgh	1.4	0.5	1.9	1.4	0.5	1.9	1.3	0.5	1.8
Baltimore	1.2	2.0	3.2	1.2	1.9	3.1	1.2	1.8	3.0
Washington	1.2	1.1	2.3	1.3	0.7	2.0	1.4	0.6	2.0
New Orleans	1.6	0.2	1.8	1.5	0.9	2.4	1.5	1.0	2.5
Louisville	1.4	0.5	1.9	1.4	0.5	1.9	1.4	0.5	1.9
Cincinnati	1.7	2.9	4.6	1.7	2.9	4.6	1.5	2.7	4.2
Cleveland	1.1	2.5	3.6	1.1	2.2	3.3	1.1	2.0	3.1
Chicago	2.2	3.0	5.2	2.2	2.9	5.1	2.5	2.6	5.1
Detroit	1.6	1.5	3.1	1.6	1.7	3.3	1.7	1.5	3.2
Milwaukee	2.2	2.9	5.1	2.4	2.6	5.0	2.4	2.6	5.0
Saint Louis	1.3	2.6	3.9	1.4	2.5	3.9	1.6	2.4	4.0
Saint Paul	1.2	1.8	3.0	1.3	1.7	3.0	1.3	1.5	2.8

The States in which the rates of State taxation were most excessive during the years 1876, 1877, and 1878 are shown in the table below :

States.	1876.			1877.			1878.		
	U. S.	State.	Total.	U. S.	State.	Total.	U. S.	State.	Total.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
New York	1.8	3.1	4.9	1.9	2.7	4.6	2.0	2.6	4.6
New Jersey	1.4	2.1	3.5	1.4	1.9	3.3	1.4	1.8	3.2
Ohio	1.3	2.7	4.0	1.4	2.4	3.8	1.3	2.2	3.5
Indiana	1.2	2.5	3.7	1.2	2.3	3.5	1.3	2.1	3.4
Illinois	1.8	2.4	4.2	1.7	2.2	3.9	1.7	2.1	3.8
Wisconsin	1.7	2.1	3.8	1.7	2.1	3.8	1.7	2.2	3.9
Kansas	1.5	3.0	4.5	1.7	2.6	4.3	1.6	2.6	4.2
Nebraska	2.2	2.5	4.7	2.3	2.3	4.6	2.3	2.6	4.9
South Carolina	1.0	2.7	3.7	1.0	2.6	3.6	1.0	2.1	3.1
Tennessee	1.4	2.1	3.5	1.6	2.2	3.8	1.6	2.1	3.7

In the foregoing tables there appears to be an inequality in national as well as State taxation; but this inequality is seeming only, and arises from the fact that while the rate of tax imposed on circulation, deposits, and capital is uniform as to all banks and in all sections of the country, yet in the tables there is given the percentage of the total tax to the capital only. Therefore, in those States where the deposits and circulation are large in proportion to capital, the percentage appears greater. In States where the deposits and circulation are proportionately smaller, the percentage appears less. But in the case of State taxation the inequality is a real one, as the whole taxes are laid directly on the shares of capital stock alone. These heavy impost rates of necessity compel national and other banks and bankers to raise their rates of discount, in order to be able both to pay the tax and to make a reasonable return to their stockholders for the use of their capital; and this increased rate

of discount must be and is largely paid by the producers and active business men of the country, who are the customers of the banks.

For the past twelve years, upon an average combined capital and surplus of \$588,554,173, the average annual net earnings of the national banks, including the amount paid in taxes, have been \$68,078,144. Of this latter sum \$16,953,578, or about one quarter, have been annually paid in taxes, national and State, and about \$45,443,564 have been annually paid in dividends. Of the \$16,953,578 paid annually in taxes of all kinds, \$3,239,999 have been paid to the United States under the law taxing deposits and capital, the repeal of which the Comptroller earnestly recommends. These taxes amount to nearly one per cent. of the average capital, and its repeal would undoubtedly, in the case of the country banks at least, have an appreciable effect in lowering the rate of discount.

RESERVE.

The following table exhibits the amount of net deposits, and the reserve required thereon by the act of June 20, 1874, together with the amount and classification of reserve held by the national banks in New York City, in the other reserve cities, and by the remaining banks at the date of their reports in October of each year from 1875 to 1879.

NEW YORK CITY.

	Number of banks	Net deposits.	Reserve required.	Reserve held.		Classification of reserve.			
				Amount.	Ratio to deposits.	Specie.	Other lawful money.	Due from agents.	Redemption fund.
		<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Per cent.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>	<i>Millions.</i>
October 1, 1875	48	202.3	50.6	60.5	29.9	5.0	54.4	.....	.....
October 2, 1876	47	197.9	49.5	60.7	30.7	14.6	45.3	.....	.....
October 1, 1877	47	174.9	43.7	48.1	27.5	13.0	34.3	.....	.....
October 1, 1878	47	189.8	47.4	50.9	26.8	13.3	36.5	.....	.....
October 2, 1879	47	210.2	52.6	53.1	25.3	19.4	32.6	.....	.....

OTHER RESERVE CITIES.

October 1, 1875	188	223.9	56.0	74.5	33.3	1.5	37.1	32.3	.....
October 2, 1876	189	217.0	54.2	76.1	35.1	4.0	37.1	32.0	.....
October 1, 1877	188	204.1	51.0	67.3	33.0	5.6	34.3	24.4	.....
October 1, 1878	184	199.9	50.0	71.1	35.6	9.4	29.4	29.1	.....
October 2, 1879	181	223.8	57.2	83.5	36.5	11.3	33.0	35.7	.....

STATES AND TERRITORIES.

October 1, 1875	1,851	307.9	46.3	100.1	32.5	1.6	33.7	53.3	1
October 2, 1876	1,853	291.7	43.8	99.9	34.3	2.7	31.0	55.4	1
October 1, 1877	1,845	290.1	43.6	95.4	32.9	4.2	31.6	48.9	1
October 1, 1878	1,822	289.1	43.4	106.1	36.7	8.0	31.1	56.6	1
October 2, 1879	1,820	329.9	49.5	124.3	37.7	11.5	30.8	71.3	1

SUMMARY.

October 1, 1875	2,087	734.1	152.2	235.1	32.0	8.1	125.2	85.6	1
October 2, 1876	2,089	706.6	147.5	236.7	33.5	21.3	113.4	87.4	1
October 1, 1877	2,080	669.1	138.3	210.8	31.5	22.8	100.2	73.3	1
October 1, 1878	2,053	678.8	140.8	226.1	33.6	30.7	97.0	85.1	1
October 2, 1879	2,048	768.9	159.3	260.9	33.9	42.2	95.9	107.0	1

It will be seen from the above table that the reserve held by the banks in the city of New York on October 2 last was much less in proportion

to their liabilities than it had been at a corresponding date in any of the four preceding years.

The following table, compiled from returns made to the Clearing House by the national banks in New York City, exhibits the movements of their lawful-money reserve, weekly, during the month of October, for the last seven years:

From the above table it appears that while the national banks, in October last, held the amount of reserve required by law, the proportion of their reserve to their liabilities was much less during that month than it has been at any time since 1873.

The returns of the banks to the Clearing House for the week ending October 25 last, showed that the reserve of a considerable number of them was below the requirements of the law. Letters were at once addressed to these banks, directing them to increase their reserve to the necessary amount. Replies were received showing that the deficiency of reserve was in many cases but temporary. Other banks still showed a deficiency during the week following. These delinquent banks were again notified, and the returns for the week ended November 22, show that the specie had increased \$27,633,032 since October 2, which, notwithstanding the fact that the legal-tender notes had decreased in the same time \$16,578,284, made a net increase of \$11,054,748 in the reserve funds.

A table showing the average weekly deposits, circulation and reserve of the national banks in New York City, for the months of September and October since 1872, will be found in the appendix.

Tables will also be found in the appendix exhibiting the state of the lawful-money reserve of the national banks, as shown by their reports from September 12, 1873, to October 2, 1879, together with a table showing the reserves by States and principal cities for October 2, 1879.

NATIONAL-BANK CIRCULATION.

A table exhibiting by States and geographical divisions the number of banks organized and in operation, with their capital, bonds on deposit, and circulation issued, redeemed, and outstanding, on November 1, 1879, will be found in the appendix.

The act of February 25, 1863, and the subsequent act of June 3, 1864, authorized the issue of 300 millions of dollars of national-bank circulation, which was increased by the act of July 12, 1870, to 354 millions. The act of June 20, 1874, authorized any national bank desiring to withdraw its circulating notes, in whole or in part, to deposit lawful money with the Treasurer of the United States in sums of not less than nine thousand dollars, and to withdraw a proportionate amount of bonds held as security for such notes; and the act of June 14, 1875, repealed all previous provisions restricting the aggregate amount of national-bank circulation, and required the Secretary of the Treasury to retire legal-tender notes to an amount equal to eighty per cent. of the national-bank notes thereafter issued, until the amount of such legal-tender notes outstanding should be 300 millions and no more. That provision of the act which required a reduction of United States legal-tender notes was, however, repealed by the act of May 31, 1878. Subsequent to the passage of the act of June 20, 1874, and that of January 14, 1875, which latter act authorized the retirement and reissue of national-bank notes at the pleasure of the banks, the circulation steadily decreased in volume until the year 1877, the total decrease in this interval being \$30,869,655. During the year ending November 1, 1878, there was an increase of \$4,216,684, and during the year ending November 1, 1879, a further increase of \$14,742,503, as will be seen from the following table, which exhibits the total outstanding circulation, not including mutilated notes in transit, on the 1st day of November of each year for the last thirteen years, and also upon the dates of the acts above named :

November 1, 1867	\$299,153,296	November 1, 1874	\$351,927,248
November 1, 1868	300,002,234	January 14, 1875	351,961,459
November 1, 1869	299,910,418	November 1, 1875	345,556,902
November 1, 1870	302,607,842	November 1, 1876	321,150,718
November 1, 1871	324,810,656	November 1, 1877	316,775,111
November 1, 1872	341,512,772	May 31, 1878	321,232,099
November 1, 1873	348,382,046	November 1, 1878	320,991,795
June 20, 1874	349,694,182	November 1, 1879	335,134,504

Since the passage of the act of June 20, 1874, \$90,229,886 of legal-tender notes have been deposited in the Treasury by the national banks, for the purpose of reducing their circulation, and \$81,136,362 of bank-notes have been redeemed, destroyed, and retired.

From the date of the passage of the act of January 14, 1875, to that of the act of May 31, 1878, which prohibited the further cancellation of legal-tender notes, \$44,148,730 of additional circulation was issued, and legal-tender notes equal to eighty per cent. thereof, or \$35,318,984, was retired, leaving the amount authorized \$346,681,016, which is the amount of legal-tender notes now outstanding.

The amount of additional circulation issued for the year ending November 1, 1879, was \$22,933,490, of which \$7,494,170 was issued during the months of September and October. The amount issued to banks organized during the year was \$2,615,440; the amount retired was \$8,190,987; the actual increase for the year being \$14,742,503. During the year ending November 1, 1879, lawful money to the amount of

The following table exhibits the monthly issue and retirement of national-bank notes for the year ending November 1, 1879:

Months.	National-bank circulation.		Legal-tender notes.	
	Issued.	Retired.	Deposited.	Retired.
1878.				
November	\$1, 219, 720	\$189, 219	\$494, 519	\$189, 219
December	801, 836	276, 633	908, 996	276, 633
1879.				
January	1, 073, 510	287, 475	1, 387, 950	287, 475
February	2, 078, 190	424, 428	1, 085, 000	424, 428
March	2, 003, 400	919, 814	1, 407, 796	919, 814
April	2, 957, 650	478, 746	1, 034, 287	478, 746
May	1, 290, 920	893, 239	500, 142	893, 239
June	1, 428, 480	1, 147, 294	319, 850	1, 147, 294
July	955, 430	674, 091	1, 844, 650	674, 091
August	1, 628, 130	732, 819	464, 500	732, 819
September	3, 912, 120	427, 017	573, 300	427, 017
October	3, 582, 050	594, 722	818, 000	594, 722
National-bank notes surrendered to this office and retired	22, 933, 490	7, 040, 397	10, 319, 398	7, 040, 397
Total	22, 933, 490	8, 190, 967	10, 319, 398	7, 040, 397

A table will be found in the appendix which shows, to November 1, 1878, the monthly issue and retirement of national-bank notes, and the increase or decrease in their amount, under the act of January 14, 1875.

The following table shows concisely the operations of the acts of June 20, 1874, and of January 14, 1875, from the dates of their passage to November 1, 1879:

NATIONAL-BANK NOTES.

Amount outstanding June 20, 1874	\$349, 894, 182
Amount outstanding January 14, 1875	351, 861, 450
Amount outstanding May 31, 1878	322, 555, 965
Amount outstanding at date *	335, 734, 298
Increase during the last month	2, 909, 178
Increase since January 1, 1879	13, 411, 444
Increase since November 1, 1878	14, 742, 503

LEGAL-TENDER NOTES.

Amount outstanding June 20, 1874	\$382, 000, 000
Amount outstanding January 14, 1875	382, 000, 000
Amount retired under act of January 14, 1875, to May 31, 1878	35, 319, 984
Amount outstanding on and since May 31, 1878	346, 681, 016
Amount on deposit with the Treasurer United States to redeem notes of insolvent and liquidating banks, and banks retiring circulation under act of June 20, 1874	12, 907, 199
Decrease in deposit during the last month	276, 122
Increase in deposit since January 1, 1879	2, 335, 434
Increase in deposit since November 1, 1878	3, 273, 001

The notes of the eight national gold banks located in the State of California, which have an aggregate capital of \$4,000,000, and a circulation of \$1,447,120, are not included in the above table.

* Circulation of national gold banks not included in the above, \$1,447,120.

REDEMPTION.

act of June 20, 1874, provides that every national bank shall keep and have on deposit in the Treasury of the lawful money of the United States, a sum equal to five per cent. of the circulation, to be held and used for the redemption of the notes. Since the passage of this act the banks have, as a redemption fund, and their circulating notes have been deposited at the Treasury without expense to the government.

The following table exhibits the amount of national-bank notes received monthly by the Comptroller of the Currency, for November 1, 1879, and the amount received for the redemption agency of the Treasury, together with the amount received since the passage of the act of June 20, 1874:

Received by Comptroller				Total.	Received at redemption agency.
From national banks for reissue or surrender.	From redemption agency for reissue.	Notes of national banks in liquidation.	Under act of June 20, 1874.		
\$14,100	\$2,395,400	\$116,716	\$156,809	\$2,683,215	\$8,936,806
20,200	2,097,400	124,861	170,886	3,072,347	8,431,674
21,010	3,017,100	131,583	340,530	3,510,223	12,160,807
71,563	2,808,800	159,476	555,732	3,685,628	13,083,822
79,740	3,004,400	217,988	558,000	3,850,218	11,869,173
23,100	2,973,000	110,280	410,344	3,510,714	10,346,523
77,400	4,437,000	197,060	889,617	5,601,277	15,000,085
25,100	4,542,500	354,871	848,740	5,771,211	13,208,800
82,380	3,047,000	43,780	282,423	3,450,483	9,123,425
19,200	2,704,000	170,480	414,838	3,317,618	8,314,566
6,600	2,014,100	64,030	400,808	2,494,538	4,508,041
13,700	1,638,200	81,420	267,380	2,000,706	3,349,760
433,180	33,369,600	1,781,547	5,314,653	42,919,182	117,191,999
11,970,045	321,520,053	12,968,366	61,621,768	407,480,233	867,294,298
12,423,225	356,889,853	14,749,012	66,336,423	450,399,415	984,436,292

ending November 1, 1879, there was received at the Treasury \$117,199,999 of national bank notes, \$43,966,000, or about 38 per cent., was received from the New York City, and \$42,757,000, or about 37 per cent., from the amount received from Philadelphia was \$5,041,000; from New York, \$545,000; Cincinnati, \$1,153,000; St. Louis, \$1,441,000; Providence, \$2,785,000. The circulating notes fit for circulation, returned by the banks of issue during the year, was \$75,284,500. The amount received by the Comptroller for destruction, from the redemption fund and from the national banks direct, was \$41,101,830. \$3,762,953 were issues of banks in the city of New York; \$1,445,100 of Philadelphia; \$1,425,423 of St. Louis; \$743,816 of Baltimore; \$631,370 of Pittsburgh; and from other principal cities, less than \$500,000.

The following table exhibits the number and amount of national-bank notes of each denomination which have been issued and redeemed since the organization of the system, and the number and amount outstanding on November 1, 1879:

Denominations.	Number.			Amount.		
	Issued.	Redeemed.	Outstanding.	Issued.	Redeemed.	Outstanding.
Ones	23, 167, 677	19, 600, 477	3, 567, 200	\$23, 167, 677	\$19, 600, 477	\$3, 567, 200
Twos	7, 747, 519	6, 701, 270	1, 046, 249	15, 495, 038	13, 402, 540	2, 092, 498
Fives	66, 578, 440	45, 896, 078	10, 682, 362	332, 892, 200	229, 980, 380	97, 911, 820
Tens	25, 904, 223	14, 930, 508	10, 973, 624	259, 042, 230	149, 305, 990	109, 736, 240
Twenties	7, 869, 951	4, 237, 343	3, 632, 608	157, 399, 020	84, 746, 880	72, 652, 140
Fifties	1, 211, 761	785, 253	426, 498	60, 588, 050	39, 263, 150	21, 324, 900
One hundreds	650, 730	581, 604	269, 116	65, 073, 000	58, 160, 400	28, 911, 600
Five hundreds	20, 570	19, 287	1, 283	10, 285, 000	9, 643, 500	641, 500
Thousands	6, 340	6, 067	283	6, 340, 000	6, 067, 000	283, 000
					*-13, 588	*+13, 588
Total	132, 357, 201	92, 857, 976	39, 499, 225	945, 281, 215	610, 146, 711	335, 134, 504

* Portions of notes lost or destroyed.

A table showing the number and denominations of the national-bank notes issued and redeemed, and the number of each denomination outstanding on November 1, for the last twelve years, will be found in the appendix.

The following table shows the amount of national-bank notes received at this office and destroyed yearly, since the establishment of the system:

.....	\$175, 490
er 31, 1866	1, 050, 383
er 31, 1867	3, 401, 423
er 31, 1868	4, 602, 825
er 31, 1869	5, 003, 729
er 31, 1870	14, 305, 089
er 31, 1871	24, 844, 047
er 31, 1872	30, 211, 720
er 31, 1873	36, 433, 171
er 31, 1874	49, 939, 741
er 31, 1875	137, 697, 096
er 31, 1876	98, 072, 716
er 31, 1877	76, 918, 963
er 31, 1878	57, 381, 249
er 31, 1879	41, 101, 830
of notes of banks in liquidation	25, 324, 090
Total	610, 165, 370

STATE AND SAVINGS BANKS.

Section 333 of the Revised Statutes requires the Comptroller to report to Congress "a statement exhibiting under appropriate heads the resources and liabilities and condition of the banks, banking companies, and savings-banks organized under the laws of the several States and Territories, such information to be obtained from the reports made by such banks, banking companies and savings-banks to the legislatures, or officers of the different States and Territories, and where such reports cannot be obtained, the deficiency to be supplied from such other authentic sources as may be available."

The laws of the United States require returns of capital and deposit to

The following table exhibits by States, cities, and geographical divisions the average capital and deposits of the same banks and bankers, and taxes thereon, for the same period :

States and Territories.	No. of banks.	Capital.	Deposits.	TAX.		
				On capital.	On deposits.	Total.
Maine.....	66	\$41,209	\$22,201,402	\$65 52	\$643 16	\$710 68
New Hampshire.....	71	61,000	28,786,055	152 50	2,041 34	2,193 84
Vermont.....	22	351,200	7,890,150	819 20	3,436 90	4,256 10
Massachusetts.....	164	810,000	148,785,115	1,358 70	5,149 48	6,508 18
Boston.....	57	3,357,412	61,086,908	3,573 93	17,432 42	21,006 35
Rhode Island.....	53	3,565,961	42,614,408	7,079 33	23,961 69	31,021 02
Connecticut.....	103	2,040,000	74,227,500	4,802 83	19,758 56	24,621 33
New England States.....	536	10,826,782	284,171,538	17,892 01	72,425 49	90,317 50
New York.....	317	9,338,629	142,418,999	16,790 91	75,556 01	92,346 92
New York City.....	459	43,037,777	250,684,151	59,323 50	232,969 75	291,527 25
Albany.....	12	641,000	12,744,636	706 02	3,619 02	4,325 04
New Jersey.....	55	1,554,540	18,073,791	2,725 00	9,078 48	11,803 48
Pennsylvania.....	280	9,328,171	29,886,082	21,540 23	59,110 89	80,651 21
Philadelphia.....	59	1,932,718	43,417,806	4,075 00	00,591 74	64,667 43
Pittsburgh.....	33	4,466,965	12,044,729	9,407 07	17,249 02	26,656 09
Delaware.....	8	640,412	1,745,570	1,545 05	1,691 70	3,236 75
Maryland.....	12	570,723	630,081	718 99	1,119 07	1,838 06
Baltimore.....	38	3,871,889	23,891,161	8,051 40	11,617 84	19,669 24
Washington.....	7	377,550	2,571,645	137 50	5,730 27	5,867 77
Middle States.....	1,290	75,771,374	582,560,551	125,022 55	467,567 89	592,590 44
Virginia.....	75	3,226,654	6,760,857	7,258 98	16,098 18	23,357 16
West Virginia.....	21	1,478,645	3,797,525	3,291 90	9,483 76	12,785 66
North Carolina.....	12	442,377	833,385	1,103 95	2,083 43	3,187 38
South Carolina.....	14	720,633	806,592	1,497 83	2,016 43	3,514 26
Georgia.....	60	3,937,486	4,545,928	9,644 67	10,315 17	19,959 84
Florida.....	6	81,783	215,970	204 45	539 02	744 37
Alabama.....	24	1,060,969	1,008,807	2,686 65	4,771 92	7,358 57
Mississippi.....	29	1,226,268	1,682,166	2,375 15	4,205 25	6,580 40
Louisiana.....	3	111,450	59,575	166 12	148 93	315 05
New Orleans.....	19	3,968,196	6,316,557	8,037 57	13,602 94	21,640 51
Texas.....	103	3,020,868	5,503,345	8,215 82	13,758 32	21,974 14
Arkansas.....	14	207,903	336,328	352 60	840 82	1,193 42
Kentucky.....	68	6,454,156	6,134,643	15,010 92	15,336 37	30,347 29
Louisville.....	16	5,585,957	5,271,471	12,706 05	13,178 64	25,884 69
Tennessee.....	30	1,758,029	2,837,635	3,365 55	7,094 48	10,460 03
Southern States.....	494	33,921,406	47,019,984	75,820 21	113,484 56	189,304 77
Ohio.....	239	5,968,718	15,602,726	12,562 33	37,890 15	50,452 48
Cincinnati.....	16	1,707,174	4,591,510	2,777 02	11,478 76	14,255 78
Cleveland.....	10	962,317	12,683,332	1,439 88	15,102 54	16,542 42
Indiana.....	149	4,636,292	10,541,661	10,777 33	23,132 38	33,909 71
Illinois.....	317	4,034,349	12,394,243	8,055 23	29,216 94	37,272 17
Chicago.....	33	3,964,828	7,636,766	4,045 84	19,574 49	23,620 33
Michigan.....	146	2,327,238	5,183,535	5,511 93	12,958 57	18,470 50
Detroit.....	16	1,110,775	5,848,086	1,869 26	12,808 17	14,677 43
Wisconsin.....	92	1,405,619	3,640,814	3,152 14	9,124 45	12,276 59
Milwaukee.....	10	743,541	5,785,170	1,772 20	14,412 91	16,185 11
Iowa.....	200	5,084,219	9,291,284	11,920 27	23,055 51	34,975 78
Minnesota.....	82	1,670,319	3,520,090	4,077 73	8,237 51	12,315 24
Missouri.....	171	4,053,300	10,037,955	8,088 61	26,594 39	35,583 00
Saint Louis.....	28	6,335,969	16,543,646	12,324 13	41,350 89	53,674 02
Kansas.....	126	1,369,532	3,175,805	3,183 11	7,929 29	11,122 40
Nebraska.....	46	444,349	1,250,437	1,053 30	8,125 92	9,179 22
Western States.....	1,771	46,036,539	128,602,460	64,110 31	296,011 87	360,122 18
Oregon.....	12	1,078,739	1,353,172	2,573 01	3,254 83	5,827 84
California.....	87	10,337,967	16,707,656	25,482 40	36,277 48	61,759 88
San Francisco.....	28	21,369,142	64,312,295	40,606 29	110,794 98	151,401 27
Colorado.....	32	635,180	1,724,854	1,587 84	4,312 04	5,899 88
Nevada.....	19	368,737	1,638,318	921 83	4,220 76	5,142 59
Utah.....	10	230,000	857,933	575 00	2,144 79	2,719 79
New Mexico.....	5	5,000	86,251	12 50	215 62	228 12
Wyoming.....	4	106,411	191,290	266 03	478 22	744 25
Idaho.....	3	6,083	45,304	15 20	113 25	128 45
Dakota.....	12	109,093	200,995	254 81	502 46	757 27
Montana.....	8	154,204	284,136	385 51	710 31	1,095 82
Washington.....	4	207,000	339,991	517 50	849 96	1,367 46
Arizona.....	7	81,827	76,107	304 56	190 24	494 80
Pacific States and Territories.....	231	34,683,383	87,808,302	73,402 48	164,064 94	237,467 42
Totals.....	4,312	201,241,484	1,180,122,885	386,247 56	1,113,554 75	1,499,802 31

Similar tables for previous semi-annual periods will be found in the appendix.

From the State authorities reports of State and savings-banks and trust and loan companies have been obtained in the case of twenty-one States and the District of Columbia. Reports of State banks have been received from twenty States, of savings-banks from fourteen States, and of trust and loan companies from six States. From seventeen States no reports have been received. In the appendix may be found statements of the returns received from the various States, and a summary of the whole.

This summary, as may be seen from the number of States from which no returns have been received, and from the incompleteness of some which have been received, does not present a satisfactory exhibit of the resources and liabilities of the State and savings-banks of the United States, and it will be impossible to obtain such an exhibit until laws are enacted by the legislatures of all the States which shall require these banks to make uniform reports to the proper officers.

In the Comptroller's report for 1877 the form of a bill was presented, substantially the same as one passed by the legislature of Ohio in 1876, which, should it become a law in each of the States, would obviate the difficulty now experienced in obtaining full and accurate statistics in regard to banks doing business under State laws.

* * * * *

In concluding this report, the Comptroller gratefully acknowledges the ability and devotion to the public service of the officers and clerks associated with him in the performance of official duties.

JOHN JAY KNOX,
Comptroller of the Currency.

HON. SAMUEL J. RANDALL,
Speaker of the House of Representatives.

REPORT OF THE DIRECTOR OF THE MINT.

TREASURY DEPARTMENT,
OFFICE DIRECTOR OF THE MINT,
November 11, 1879.

SIR: I have the honor to submit the following report of the operations of the mints and assay-offices of the United States during the fiscal year ended June 30, 1879.

The nine institutions subordinate to this bureau comprise the four coinage mints at Philadelphia, San Francisco, Carson, and New Orleans, the mint at Denver operated as an assay-office, and the assay-offices at New York, Boise City, Helena, and Charlotte. The operations authorized by law to be carried on at the mints and assay-offices may be briefly enumerated:

1. The receiving, melting, and assaying of gold and silver deposits, and paying from Treasury funds in gold coin or bars for gold deposits, and in silver bars for silver deposits, at all the mints and assay-offices.

2. The parting and refining of gold and silver bullion and manufacture of fine bars at the coinage mints and the assay-office at New York.

3. The coinage of gold and silver bullion at the mints at Philadelphia, San Francisco, Carson, and New Orleans.

4. The coinage of minor coins at the mint at Philadelphia.

5. The manufacture of medals and proof coin, and the execution of coinage-dies for all the mints, at the mint at Philadelphia.

DEPOSITS AND PURCHASES.

During the fiscal year the total deposits of gold and silver—including silver purchases—amounted to \$71,179,654.65, of which \$42,254,156.80 were gold, and \$28,925,497.85 were silver.

Of the above amounts \$38,549,705.89 of gold and \$26,934,728.56 of silver were of domestic production; \$198,083.17 of gold and \$10,607.79 of silver were United States coin; \$1,069,796.89 of gold and \$1,072,919.29 of silver were of foreign bullion; \$1,498,819.71 of gold and \$698,632.49 of silver were foreign coin; and \$937,751.14 of gold and \$208,609.72 of silver were of plate and other manufactured articles.

The deposits and purchases of gold and silver bullion, including re-deposits, were as follows:

Mint or assay-office.	Gold deposits.	Silver deposits and purchases.	Total.
Mint at Philadelphia	\$9,662,082 22	\$9,678,094 23	\$19,340,176 45
Mint at San Francisco	29,440,456 04	13,839,428 81	43,329,884 85
Mint at Carson	318,852 71	1,020,660 24	1,339,512 95
Mint at Denver	410,889 33	6,120 46	417,009 79
Mint at New Orleans	67,413 67	1,128,194 06	1,195,607 73
Assay-office at New York	11,345,562 98	7,019,698 35	18,365,261 33
Assay-office at Boisé	67,296 17	4,218 19	71,484 36
Assay-office at Helena	465,471 16	324,707 17	730,178 33
Assay-office at Charlotte	53,947 83	397 21	54,345 04
Total	51,771,942 11	33,071,518 72	84,843,460 83

A number of the deposits made at the assay-offices found their way to the coinage mints or to different assay-offices in the form of bars and were redeposited, and, although not augmenting the net receipts, increased the amount of bullion operated upon, either in the conversion of unparted into fine bars or in coinage, and this to the extent of \$13,663,806.18, of which \$9,517,785.31 were gold and \$4,146,020.87 were silver.

PARTING AND REFINING.

The amounts of gold and silver separated in the refineries of the coinage mints and the assay-office at New York were \$20,759,549.97 of gold and \$10,687,526.97 of silver, a total of \$31,447,076.94, and were in detail as follows:

Mint.	Gold.	
	Fine ounces.	Value.
Mint at Philadelphia	46,822.657	\$967,910 24
Mint at San Francisco	517,808.154	10,699,910 16
Mint at Carson	14,124.950	292,195 34
Assay-office at New York	425,677.468	8,799,534 23
Total	1,004,243.229	20,759,549 97
Mint.	Silver.	
	Fine ounces.	Value.
Mint at Philadelphia	321,408.01	\$415,557 83
Mint at San Francisco	4,439,622.87	5,804,764 93
Mint at Carson	282,529.46	365,290 61
Assay-office at New York	3,172,573.80	4,101,913 60
Total	8,266,134.14	10,687,526 97

BARS.

The bars manufactured—fine and unparted—amounted to \$22,022,-614.79, of which \$12,976,812.68 were gold and \$9,045,802.11 were silver. They were made at the mints and assay-offices as follows:

Mint or assay-office.	Fine gold.	Unparted gold.	Mint gold.	Total gold.
Mint at Philadelphia.....	\$89,907 82			\$89,907 82
Mint at San Francisco.....		\$1,798 20		1,798 29
Mint at Carson.....				
Mint at New Orleans.....				
Mint at Denver.....		413,103 06		413,103 06
Assay-office at New York.....	6,638,213 41		\$5,309,001 11	11,948,214 52
Assay-office at Boise.....		64,280 00		64,280 00
Assay-office at Helena.....		405,471 10		405,471 16
Assay-office at Charlotte.....		53,947 83		53,947 83
Total.....	6,729,211 23	938,600 34	5,309,001 11	12,976,812 68

Mint or assay-office.	Fine silver.	Unparted silver.	Total silver.
Mint at Philadelphia.....	\$125,614 22		\$125,614 22
Mint at San Francisco.....	1,555,184 63	\$24,012 75	1,579,197 38
Mint at Carson.....			
Mint at New Orleans.....			
Mint at Denver.....		2,165 50	2,165 50
Assay-office at New York.....	7,006,828 98		7,006,828 98
Assay-office at Boise.....		6,891 65	6,891 65
Assay-office at Helena.....		324,707 17	324,707 17
Assay-office at Charlotte.....		397 21	397 21
Total.....	8,687,627 83	358,174 28	9,045,802 11

Fine gold bars were manufactured and issued only at the mint at Philadelphia and the assay-office at New York. Of the total amount of gold bars, \$12,976,812.68, the assay office at New York made \$11,948,-214.52, of which amount \$8,754,734.26 were redeposited at the mint at Philadelphia, and \$2,901,844 were delivered to depositors for use in the arts and manufactures.

The total amount of silver bars was \$9,045,802.11, of which \$1,555,-184.63 in fine bars, made at the mint at San Francisco, were probably exported; and of \$7,006,828.98, made at the assay-office at New York, \$4,482,975 were delivered for manufacturing purposes, and the balance received at the Philadelphia mint for coinage.

MEDALS AND DIES.

During the year there were struck at the mint at Philadelphia 114 medals of gold, 1,037 of silver, and 770 of bronze, the profits on which amounted to \$2,493.36; 544 proof-sets of United States coins were also made, and 905 coinage and medal dies executed.

Full detailed statements of the foregoing operations will be found in the appendix.

APPROPRIATIONS, EARNINGS, AND EXPENDITURES.

The amount of the specific appropriations made by Congress for the support of the several mints and assay-offices of the United States for the fiscal year ended June 30, 1879, was \$1,243,640, of which the sum of \$1,175,249.50 was expended. The appropriations and expenditures were as follows:

Appropriations.

Office.	Salaries.	Wages.
.....	\$1,270	\$125 00
.....	1,000	250 00
.....	2,500	20 00
.....	1,300	57 00
.....	7,000	8,000
.....	23,100	22,000
.....	5,700	7,000
.....	2,000	.....
.....	2,500	.....
.....	157,000	774,800

Expenditures.

Salaries.	Wages.	Contingent expenses.
\$34,850 00	\$284,764 10	\$82,000 00
21,000 00	260,000 84	75,000 00
21,419 20	70,000 36	21,000 00
18,113 48	50,208 91	24,000 00
7,000 00	8,000 00	3,000 00
33,150 00	20,243 50	7,000 00
6,677 14	5,104 26	7,000 00
3,000 00	2,000 00
2,500 00
152,710 52	716,300 00	226,000 00

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The gain arising under section 3526 Revised Statutes on the coinage of silver during the fiscal year ended June 30, 1879, was \$3,287,446.09, from which \$17,439.48 was paid for wastage, \$93,474.32 for expenses of distribution, and of the remainder, the sum of \$2,954,454.69 was paid into the Treasury.

The profits on the minor coinage from July 1, 1878, to June 30, 1879, were \$31,292.33, from which \$1,299.97 were paid for transportation, and \$775 for wastage.

PURCHASES OF SILVER BULLION.

Silver bullion has been purchased, during the year, at the coinage mints and at the assay-office at New York, for the coinage of standard silver dollars. Authority was given to the superintendents of the mints at Philadelphia, San Francisco, Carson City, and New Orleans to purchase in lots of less than ten thousand ounces. During the year about 1,000,000 standard ounces were thus purchased by them. Purchases in lots of ten thousand ounces and over are made by the Director of the Mint, with the approval of the Secretary of the Treasury, upon the recommendation of a commission designated March 9, 1878, consisting of the Director of the Mint, Hon. H. F. French, Assistant Secretary of the Treasury, and James Gilfillan, Treasurer of the United States, who examine and consider all offers that may be received. The Director of the Mint and the Assistant Secretary of the Treasury are each required to keep a detailed record of all offers, and the action taken thereon.

Prior to October 17, 1878, offers were received at any time. On that date, notice was given that offers for the sale of silver bullion, in lots of not less than ten thousand ounces, would be received and considered on Wednesday of each week.

Owing to the large amount of silver bullion which had accumulated at the Philadelphia mint, it was deemed advisable to cease purchasing for delivery at that point, and bullion dealers were notified February 6, 1879, that, until further notice, offers for the sale of silver would be considered for delivery at the mints at San Francisco and New Orleans only, and purchases, except by the superintendent, were suspended during the remainder of the fiscal year.

Notwithstanding the fact that the mint at Carson City is located but a short distance from the productive mines of the Comstock Lode, higher prices were demanded for bullion deliverable at Carson than at San Francisco, and, in addition, the rates charged by the express company for transportation of silver dollars were higher from Carson than from San Francisco.

For these reasons, it was decided, with the approval of the Secretary of the Treasury, to suspend the coinage of the standard silver dollar at the Carson mint, and instructions were given February 26, 1879, to the superintendent thereof to coin up as closely as practicable the bullion then on hand, and to cease purchasing under the authority previously given him to purchase lots of less than ten thousand ounces, and to retain only such number of workmen and adjusters as might be necessary to manipulate such gold bullion as should be deposited for conversion into coin or fine bars, and the silver bullion deposited for returns in fine bars.

About the time instructions discontinuing the coinage of silver dollars at Carson were given a slight demand arose at San Francisco for silver for export, which, with the falling off in the production, enabled bullion dealers in many instances to dispose of their bullion at higher prices than that which the department regarded as the full market price; hence the purchases at that point have for several months past been com-

paratively light, and at the close of the fiscal year the stock of silver bullion at the San Francisco mint was reduced to merely a nominal amount.

The purchases of silver bullion for the New Orleans mint have, with the exception of some four hundred thousand ounces, been in lots less than ten thousand ounces, and consisted principally of Mexican dollars and old plate. When this mint was reopened for coinage it was expected that a considerable amount of silver bullion would be supplied from Mexico, but these expectations have not thus far been realized. Notwithstanding the fact that the department has offered to pay the bankers and bullion dealers in New Orleans the highest market price for silver, deliverable at the mint in that city, only two or three offers for the sale of silver have been made to the department by them, and in each case at a price above the market rate. In some instances offers have been received from New York to deliver silver at New Orleans, but at prices above the market rate, and the offers, with few exceptions, were declined.

At the date of the passage of the specie-resumption act, January 14, 1875, the amount of silver bullion belonging to the government in the mints at Philadelphia, San Francisco, Carson City, and the assay-office at New York, approximated 1,750,000 standard ounces. This and the silver subsequently purchased for the fractional coinage and for the standard dollar on hand and uncoined June 30, 1878, amounted to 7,111,059.07 standard ounces. From July 1, 1878, to June 30, 1879, the purchases, including silver parted from gold, were 21,334,245.96 standard ounces.

The amount consumed during the fiscal year in the coinage of 27,227,500 standard silver dollars and \$382.50 in fractional silver coin, including wastage (14,987.05 ounces), was 23,403,928.07 standard ounces, leaving a balance on hand June 30, 1879, of 5,031,376.96 standard ounces.

The average London price of silver bullion from July 1, 1878, to June 30, 1879, was $50\frac{1}{8}$ pence British standard, 925 fine, equivalent at average rate of exchange, 488.04, to 1.00534+ per ounce United States standard, 900 fine.

The average price of silver bullion purchased during the year was 100.96+ cents per ounce standard.

The amount of silver bullion purchased, including silver parted from gold deposits, from March 1, 1878, to September 30, 1879, was 37,364,918.08 standard ounces, at a cost of \$38,594,435.89, being an average monthly purchase of \$2,031,286.10 worth of bullion. The coinage of silver dollars for the same period was 42,634,100, an average of 2,243,900 per month.

The following statement exhibits the amount of silver bullion purchased and parted from gold deposits at the respective coinage mints and the assay-office at New York, from July 1, 1878, to June 30, 1879:

<i>Mint at Philadelphia.</i>		
	Standard ounces.	
Purchased	7, 441, 391. 02	\$7, 480, 395 30
Parted	12, 949. 83	13, 146 42
Total	7, 454, 340. 85	7, 493, 541 72
<i>Mint at San Francisco.</i>		
Purchased	10, 831, 730. 83	10, 924, 846 72
Parted	75, 438. 76	77, 007 36
Total	10, 907, 169. 59	11, 001, 854 08

Mint at Carson City.

	Standard ounces.	
Purchased	986,547.82	\$1,006,472 90
Parted	12,006 11	12,187 34
Total	998,553.93	1,020,660 24

Mint at New Orleans.

Purchased	635,548.69	632,583 14
Parted	292.48	292 48
Total	635,841.17	632,875 62

Assay-Office at New York.

Purchased	1,251,572.71	1,300,044 73
Parted	86,767.71	91,715 33
Total	1,338,340.42	1,391,759 06

Recapitulation.

Total amount purchased	21,146,791.07	21,346,342 79
Total amount parted	187,454.89	194,348 91
Total	21,334,245.96	21,540,691 70

ANNUAL ASSAY.

The commission appointed under the provisions of section 3547 of the Revised Statutes, assembled at the mint at Philadelphia and tested in the presence of the Director of the Mint the weight and fineness of the coins reserved from every delivery of coin made by the coiner to the superintendent at each of the coinage mints.

The examination of the coins showed, and the commission reported, that in all cases, both in weighing of mass and single pieces, the weights were well within the legal tolerance, and the fineness of the coins, both melted in mass and individual pieces, exhibited a satisfactory conformity with the law.

In accordance with the provisions of section 3549 of the Revised Statutes, the commission verified the standard ounce weights with the standard troy pound of the mint of the United States, and upon comparing the weights used in the daily transaction of business with the standards they were found to be exact.

FACILITIES FOR ASSAYING.

Specimens of gold and silver bearing ores, as well as other minerals, are frequently received by this office, for assay, from members of Congress and individuals in various sections of the country. Under existing arrangements they are forwarded to the mints or assay-offices to be assayed, thereby causing delay in returns and interference to some extent with the regular business of those institutions. It is, therefore, desirable that the mint bureau should have proper facilities extended to it for assaying ores and specimens of foreign coins, and also for the purpose of making the monthly tests of weight and fineness of the coins issued from the various United States mints. At present these tests are made by sending specimens of the coinage of each mint to one of the other mints or to the assay-office at New York, and the reports thereon are transmitted to this office; but it is desirable that this operation should be performed under the immediate supervision of the Director of the Mint.

The necessity of having proper facilities for testing the weight and fineness of our coins, as well as to discriminate between genuine coin and well-executed counterfeits was apparent to my predecessor in office and upon his recommendation an appropriation of \$500 was made at the second session of the Forty-fourth Congress for "fitting up an assay laboratory in the office of the Director of the Mint," but owing to a lack of room in the Treasury Building, no suitable place could be obtained, and the appropriation remained unexpended excepting the sum of \$19.50 paid for weights.

The removal of the Bureau of Engraving and Printing to the new building now in course of construction for its accommodation, will no doubt leave an available room in the Treasury building which could be utilized for the desired purpose. I therefore respectfully recommend that suitable legislation be requested at the ensuing session of Congress to provide means for establishing an assay laboratory in the office of the Director of the Mint.

COINAGE OF MINOR COINS.

Owing to the general increased business activity in the country an unusually heavy demand has been created for the minor coins, and the mint at Philadelphia has been called upon to furnish one-cent pieces in excess of its capacity for striking this denomination of coin, and at the same time execute the quota of standard silver dollars required by law.

Of the minor coins, a sufficient number of 5-cent nickel pieces are held by the mint and Treasury to supply the present demand, and the same may be said of the 3-cent nickel piece, which, however, has never been a popular denomination of coin.

The three-cent piece (silver) was authorized by the act of March 3, 1851, entitled "An act to reduce and modify the rates of postage in the United States and for other purposes," and was intended to fulfill a special purpose—the purchasing of the 3-cent postage-stamp. That it was not contemplated that they would be extensively employed for general trade purposes is evident from the fact that the act authorizing their coinage made them a limited tender in payment of sums of thirty cents and under. From the small diameter and thickness of the coin it was found to be exceedingly inconvenient, and the act of March 3, 1865, authorized the coinage of the 3-cent nickel piece.

By the provisions of the coinage act of 1873 the coinage of the 3-cent silver piece and 2-cent bronze coin was discontinued, the 3-cent nickel piece being retained.

In determining what denominations of coins will best meet the requirements of the community for change purposes, the demands of the people and the experience of other and older countries are safe guides. The history of the minor coinage since the date above mentioned, 1865, shows the nominal value of the 5-cent nickel pieces coined has amounted to \$5,774,345; of the 3-cent nickel pieces, to \$750,192; and of 1-cent bronze pieces, to \$1,259,625.

The demand for the 3-cent nickel piece and its coinage for the last few years has been merely nominal.

The coinage of the 2-cent bronze pieces, during the eight years their issue was authorized, amounted to \$912,020, and was not much less than the value of the 1-cent pieces during the same period, and largely exceeded that of the 3-cent nickel pieces for the fourteen years since their issue was authorized.

In the coinage changes made by European nations that have adopted the decimal system of coinage, such as the States of the Latin Union,

France, Belgium, Italy, Switzerland, and Greece, together with Germany, Spain, Sweden, Norway, and Denmark, the minor coin divisions of 5, 2, and 1 were considered best adapted for general change purposes.

A disturbance of the coinage of a country, either in the fineness, weight, or denominations, is a subject of grave importance, and should not be undertaken without careful consideration. In case any change should be contemplated in the coinage laws, I respectfully suggest for your consideration the propriety of recommending the discontinuance of the 3-cent nickel piece and the reauthorization of the issue of the 2-cent bronze coin, and for the following reasons:

1st. That there has never been a demand to any considerable extent for the 3-cent nickel piece, the total coinage of which has amounted to only \$856,122.

2d. The existing denominations of United States notes less than ten dollars are 5, 2, and 1, and have satisfactorily met the requirements of trade. No necessity for denominations less than ten dollars other than those seems to have arisen, and the same subdivisions for coins, less than the dime, would be equally serviceable.

3d. The amount of 1-cent pieces in circulation being already large, and the demand on the mint for a further coinage increasing, the issue of a 2-cent piece would probably enable the mint to meet the requirements of the people, and diminish the coinage of 1-cent pieces, the demand for which can be more easily relieved if the issue and free delivery of the 2-cent piece is authorized.

EXAMINATION OF THE MINTS AND ASSAY-OFFICES AND ANNUAL SETTLEMENT.

In order to make myself acquainted with the condition of the mints and assay-offices as required by section 345 of the Revised Statutes, I visited all the institutions under the control of this bureau, except the assay-offices at Boise City and Helena.

Section 3541 of the Revised Statutes requires that "at least once in every year, and at such time as the Director of the Mint shall appoint, there shall be an accurate and full statement of the accounts of the coiner and the melter and refiner, at which time those officers shall deliver up to the superintendent all the coins, clippings, and other bullion in their possession, accompanied by statements of all the bullion delivered to them since the last annual settlement, and all the bullion returned to them during the same period, including the amount returned for the purpose of settlement."

The annual settlement required by this section has been made at the close of each fiscal year.

Just before the close of the last fiscal year I visited the mint at Denver, and weighed and counted the bullion and moneys at that institution, and made an examination of their books. I then proceeded to the Carson mint, and on the 30th of June arrived at San Francisco. I personally superintended the annual settlements at the mints at Carson City and San Francisco, and all the bullion and coin was weighed and counted in my presence and the balances shown by the books verified.

Representatives from this bureau were present and superintended the annual settlements at the mints at Philadelphia and New Orleans and the assay-office at New York, and rendered reports to me in writing of the same.

The annual settlements at the mints and at the New York assay-office were highly satisfactory, and the wastage of the operative officers during the year was found to be far within the legal allowance.

chanics and others from the mints were sent to superintend the repairing of old and erection of new machinery, which had been procured. The superintendency was assumed by Henry S. Foote in December, 1878, and coinage operations commenced February 20, 1879.

The mint has not been worked to its full capacity, for the reason that like difficulty has been experienced as at San Francisco and Carson in procuring supplies of silver bullion.

Assay-Office at New York.—This institution is in as effective condition as the limited facilities of the building will permit. The present receipts of gold of foreign importation are greater than for any previous corresponding period of time, but notwithstanding the large amount of work performed, all demands for coin or fine bars in payment for deposits are promptly met.

When the importance of this office is considered, situated as it is in the great mercantile and money center of the country, it is to be regretted that better facilities are not at its command for rapid prosecution of business.

Mint at Denver ; Assay-Offices at Boise, Helena, and Charlotte.—The operations of these institutions are limited by law to melting and assaying gold and silver bullion, and paying for the same from Treasury funds. They are, as thus operated, chiefly of local benefit to the mining sections by enabling the miner to convert his bullion immediately into coin.

They are all in a satisfactory condition of efficiency as far as their management is concerned.

The mint building at Denver, which I personally inspected during a recent visit to the Western mints, is in an unsuitable condition for minting purposes. The irregular and unequal settling of the foundations has caused the walls to crack to such an extent as to render the edifice unsafe for the employes and the government property contained therein. Provision should be made, not only to restore the building, but to provide additional facilities for manipulating the precious metals.

This mint is located in the midst of a prosperous and rapidly growing community. Being at the railroad center of connecting lines from the principal mining sections of the State, as well as from New Mexico, the wealth of precious metals pouring in should be treated there, and settlement made with depositors.

I estimate the production of Colorado alone to be at the rate of at least \$15,000,000 of gold and silver per annum, and the present facilities at the Denver mint for operating upon this amount of bullion are totally inadequate.

In closing a review of the history of the Mint service during the year it would be incomplete without proper mention of the lamentable death on the 27th of January of my predecessor, Dr. H. R. Linderman, who for more than twenty-five years had been connected with the mints, and as Director, had been at the head of the Mint Bureau since its creation in 1873.

Monetary questions and the principles and practical details of coinage had for many years received his earnest and special consideration and his careful researches had acquired for him a wide reputation, not only in this country but on the continent of Europe, where his report and conclusions are quoted as authoritative by writers and statisticians.

Mr. C. W. Fremantle, deputy master of the Mint of England, in his last annual report of the Royal Mint, says:

In Dr. Linderman the American Government has lost a valuable officer, who has since 1873 exercised with great ability the supreme control over all the mints and

assay offices of the United States, and has largely contributed, both by his writings and by official reports, to a more extended knowledge of the principles upon which coinage and currency should be based.

REDEMPTION OF UNITED STATES NOTES AND SUBSIDIARY COIN.

The principal events relating to monetary affairs in the United States that have occurred during the last fiscal year, as the result of legislation, have been—

First. The resumption of specie payments through the coin redemption of United States notes upon presentation to the Assistant Treasurer at New York; and,

Second. Provision for the exchange of subsidiary silver coinage for full legal-tender money.

The resumption of specie payments after a suspension is always an epoch in the monetary history of a country.

The necessity of a temporary resort to irredeemable paper currency has been the experience of almost every commercial nation, and its return to a stable measure of value is a matter of rejoicing. Our own return has been accomplished in a manner exceedingly gratifying, without disaster, and accompanied by no financial shock or crisis.

The powers conferred upon the Secretary of the Treasury to prepare for resumption were ample, although it was declared by many to be impossible to accumulate in the country the necessary reserve of coin, without contracting the volume of the paper circulation.

On the first of January, 1879, the mints had added within two years \$90,000,000 in gold and \$50,000,000 in silver to the stock of coin, with comparatively but a slight reduction in the paper circulation, and since the first of January last, instead of there appearing to be a redundancy of paper circulation, tending to drive the specie abroad, the stock of coin and bullion in the country has increased during the calendar year to the present time nearly or quite one hundred millions of dollars, with an actual increase instead of a diminution of the coin in the Treasury.

Our experience in returning to specie payment without material reduction of the paper circulation seems to indicate that the depreciation of United States notes for the last eight years has not been due to their excess, but to their inconvertibility, and that resumption not only became possible, but assured, as soon as the accumulation of a sufficient coin reserve in the Treasury was determined upon, and measures adopted for carrying that policy into effect.

EXCHANGE OF SUBSIDIARY COINS.

Attention was called in the last annual report of the Secretary of the Treasury to the accumulation of fractional coin in certain localities and scarcity in others, and the recommendation made that their redemption in United States notes be authorized. It was there said:

The only way by which moneys of different kinds and intrinsic values can be maintained in circulation at par with each other is by the ability, when one kind is in excess, to readily exchange it for the other. This principle is applicable to coin as well as to paper money.

Action was taken upon this recommendation, and at the last session of Congress, by the act of June 9, 1879, subsidiary silver coins were made interchangeable with full legal-tender money in sums or multiples of twenty dollars at the United States Treasury, and their legal-tender quality increased from five to ten dollars.

These coins were then received with reluctance by bankers and busi-

ness men, notably on the Pacific coast, where they were rated 8 per cent. below full legal-tender money.

The effect of the law has been to bring these coins to par. Since the passage of the act, and up to November 1, there have been \$12,172,601.70 presented for exchange for other money. But for the return of the old coinage from foreign countries the demand upon the Treasury for subsidiary coins for circulation would equal the current deposits for exchange.

The principle that a nation should receive for public dues, and in exchange at its Treasury for its legal-tender money, all subsidiary or token coins that it has issued, was discussed and approved by the delegates of the States composing the Latin Union at their late monetary conference and unanimously agreed to.

INTERNATIONAL MONETARY CONFERENCE.

It is to be regretted that the efforts of our government to adopt by international agreement a common ratio between gold and silver, and establish the use of bi-metallic money, failed in its object.

The commissioners appointed by the United States and the principal European nations met at Paris in August, 1878, and the subject presented received the attention its importance demanded, and was fully and ably discussed.

From the report of the proceedings of the Conference it appears that an opinion was generally prevalent in Europe that the change in legislative action and public sentiment in this country resulted from a selfish interest in maintaining the price of silver, from its having become an important element of production, and it was not realized that a continued decline in the value of silver would result more disastrously to the wealth of Europe than to the United States; that Europe could not so well bear a loss in the money supply as the United States with its immense undeveloped resources.

Although our delegates failed to secure any recommendation to the respective governments represented at the Conference, for the use of gold and silver at a common relative value, their efforts were not without practical and beneficial results.

The discussions awakened and the information presented seem to have created a much more favorable tendency toward the use of silver as full legal-tender money, not only in the opinions of representatives at the Conference, but among leading financial writers. They are now beginning to realize that this subject is viewed in this country rather from its effect upon general business than its relations to the product of an export insignificant in value compared with the staple products of the country; that the changed public opinion results from "arguments showing that the dangerous effect upon industry by dropping one of the precious metals from the standard of value, outweigh all theoretical objections to the bi-metallic system; and that if it were possible for the leading commercial nations to fix by agreement an arbitrary relation between silver and gold, even though the market value might vary somewhat from time to time, it would be a measure of the greatest good to all nations."

Prior to the meeting of the Conference it was confidently predicted by advocates of universal mono-metallism that—

If the Conference meet at all its proceedings will amount to no more than a regulated conversation, which can be useful only so far as it may tend to dispel, more efficaciously than other methods, illusions and fallacies which have already been refuted over and over again.

The facts and arguments presented by our commissioners tended to dispel illusions and fallacies directly the opposite of these suppositions. Apparently as the result of the discussion a great change has occurred and is progressing in public opinion and in the expressed views of public men more favorable to bi-metallism.

Particularly is this the case in the two leading nations favoring the single standard, Germany and England.

Germany has suspended the further sale of silver, and some of her statesmen question the wisdom of demonetization.

In less than a year after the meeting of the Conference (the following May), Mr. Henry Hucks Gibbs, late governor of the Bank of England, and one of the representatives of the English Government to the Conference, wrote to that distinguished advocate of bi-metallism, Mr. Henri Cernuschi—

I am gone over to the enemy and am going to attack, with you, the solid ramparts of mono-metallism.

These words are indicative of the revolution in public sentiment, and are especially significant coming from one who refused to concur in the views of our representatives.

Subsequently he publicly announced his change of opinion upon mature examination, and, at the close of a pamphlet lately published by him, says:

I have expressed in it conclusions which differ very widely from the spirit of the report of the proceedings of the Paris Conference presented to the government by my colleagues and myself. I fully concurred in that report; but the more I have, since then, thought over the subject of the Conference the more I have been led to distrust some part of our reasoning, and to doubt in part the wisdom of the conclusion to which we came. In no case was it to be expected that the Conference would have simply affirmed the original resolutions of the commissioners of the United States. Indeed, the evil from which we suffer had not at that time pressed so strongly upon the minds of Englishmen as it has since done, and public opinion was less prepared than I think it now is to look with favor on any change which might promise to alleviate it.

MONETARY STATISTICS.

In addition to procuring and presenting the usual statistics of the production and circulation of the precious metals in the United States, the inquiry has been widened and pains have been taken to obtain similar information in regard to the production, coinage, and consumption of foreign countries.

Possessing richer and more extensive mines of gold and silver, and appropriating a larger amount for coinage and manufactures than any other country, the yield of the American mines and the disposition of their product is of great interest to our people, and closely watched in other parts of the world.

THE PRODUCTION OF THE PRECIOUS METALS IN THE UNITED STATES.

As will be seen, the production of 1879 is considerably less than that of the preceding year. It has resulted from the diminished yield of the mines of the Comstock Lode. A depth has been reached 1,000 feet below the bed of the Carson River, and impediments are encountered from accumulations of water and from the oppressive temperature, which discourage and have retarded vertical exploration. This has caused a falling off in the total yield of the State, from the production of the preceding year, which, as officially reported in 1878, was \$47,076,863 of

both gold and silver, but which for 1879, J. F. Hollock, the State controller, reports to be only \$19,305,473.97.

The hope of finding similar deposits or a continuation of the large ore-body of the "bonanza mines" in the lower levels of contiguous mines has not as yet been realized.

Although the production of Nevada will be large and continuous for many years, it does not appear probable that the mines of that State will make such enormous contributions to the mineral wealth of the country as they have in previous years.

This decrease has been in part compensated by the results of the more thorough exploration of the mining regions of the Rocky Mountains, especially in Central and Southern Colorado. The production of that State was at least six millions greater in the last than in the preceding year, and will probably furnish an undiminished, if not increased, amount of silver in the future.

While in Colorado inspecting the Denver Mint, I took occasion to visit the mining region in the vicinity of Leadville, and to obtain information bearing upon the question of its present and future production.

There is no doubt of mineral deposits of great richness existing in that portion of the State, which are easily mined, and from which the ore is extracted at comparatively little expense. The deposits extend over a very large area.

The smelters at and in the vicinity of Leadville have reported to this office the production of about $4\frac{1}{2}$ million dollars from the commencement of smelting in the latter part of 1878 to August, 1879, and it is estimated that in addition to this product upwards of $5\frac{1}{2}$ million dollars' worth of high-grade ore have been shipped to other works for treatment, making a total production for the Leadville district of about $9\frac{1}{2}$ million dollars since the discovery of the carbonates, about two years ago.

The rate of the out-turn of the mines is not only likely to continue for some time, but to increase as the mines are further developed, additional smelting-works put in operation, and increased facilities for shipping extended to that section.

After careful inquiry and consideration of the yield of different localities and mines in the United States, I have estimated the total production of the precious metals in the country for the fiscal year 1879 at \$79,712,000, of which \$38,900,000 was gold and \$40,812,000 silver. As nearly as can be ascertained from official reports and other reliable sources, the production was derived from the mines of the States and Territories as follows:

State or Territory.	Gold.	Silver.	Total.
California	\$17,000,000	\$2,400,000	\$20,000,000
Nevada	9,000,000	12,500,000	21,500,000
Colorado	3,225,000	11,700,000	14,925,000
Montana	2,500,000	2,225,000	4,725,000
Idaho	1,200,000	630,000	1,830,000
Utah	875,000	4,250,000	5,125,000
Arizona	800,000	3,550,000	4,350,000
New Mexico	125,000	600,000	725,000
Oregon	1,150,000	20,000	1,170,000
Washington	75,000	20,000	95,000
Dakota	2,420,000	10,000	2,430,000
Michigan (Lake Superior)		780,000	780,000
North Carolina	90,000		90,000
Georgia	90,000		90,000
Other sources	50,000	47,000	97,000
Total	38,900,000	40,812,000	79,712,000

In the report of the Director of the Mint for 1874, a table was published which had been prepared by R. W. Raymond, United States Commissioner of Mining Statistics, showing the production of gold and silver in this country from 1848 to 1873. I am unable at present to review the data from which this table was prepared or to vouch for its accuracy, but it seems to be desirable that these estimates should be brought up to date.

The following is an approximate estimate of the domestic production for the last six years. It is condensed from a table appended to this report, and embraces the entire product of each year, unless a larger amount has been used in the arts or bullion has been clandestinely exported, of which there is no proof or reasonable suspicion:

Domestic production of gold and silver, 1874 to 1879.

Fiscal year ending June 30.	Gold.	Silver.	Total.
1874	\$33,490,902	\$37,324,594	\$70,815,496
1875	33,467,853	31,727,560	65,195,413
1876	39,929,168	38,783,016	78,712,184
1877	40,897,390	39,793,573	80,690,963
1878	51,208,360	45,281,865	96,490,225
1879	38,893,858	40,812,133	79,705,991
	243,891,532	233,722,260	477,613,792

These amounts were ascertained by adding to the amount of domestic bullion purchased or deposited for coinage during the year the amount of domestic bullion exported, consumed in the arts and manufactures, and stock of bullion remaining in the country.

The value of the gold and silver contained in argentiferous ores exported in the last six years has not been included in this estimate. Their total gross value for the whole period was little more than a million dollars, and it is impossible to ascertain how much of this valuation was gold, silver, lead, or copper; and shipments have gradually decreased until, during the fiscal year ended June 30, 1879, they amounted only to \$148,195. The statistics of the production of Germany, France, and England include these ores in the reports of the value of gold and silver produced in those countries from Spanish and American ores.

DISPOSITION OF DOMESTIC PRODUCTION.

A reliable test of the accuracy of estimates of total production is their agreement with the statistics which show the disposition annually made of the precious metals.

Nearly all of the gold and a large portion of the silver produced in the United States during the last year was coined at the mints or used in domestic manufactures, arts, and ornamentation. The surplus was exported to non-producing countries.

The amount annually used for coinage and exported is readily ascertained. The Mint records show the one and the customs returns the other. Foreign coin and bullion are now reported separately from domestic. But to obtain accurate statistics of the amount annually consumed by abrasion or loss of coin, and used in the arts, manufactures, and ornamentation is a very difficult task. The annual consumption or appropriation of the precious metals for the latter purpose was placed by Humboldt, in 1803, at \$6,000,000 for France and \$23,000,000 for Europe. Mr. William Jacob, in 1831, from a careful review of the various occu-

pations using gold and silver in manufactures and ornamentation, made the annual consumption in the British Kingdom, for other purposes than coin, to be gold of the value of \$8,183,000, and silver \$4,100,000. His conclusions for Europe, then, were that gold and silver were thus annually used to the value of, in—

Great Britain	\$12,285,000
France	6,000,000
Switzerland.....	1,750,000
The remaining countries.....	8,025,000
	<hr/> 28,060,000

He estimated that the United States consumed one-twentieth part as much as Europe. He placed the consumption for these purposes in both Europe and America, at \$29,466,250, leaving for coinage as money but 10½ millions annually of the 40 millions then regarded as the world's annual production.

The estimates of the amount of gold and silver annually consumed in the United States in the manufactures, the arts, and ornamentation at the present time widely vary.

In computations heretofore made by this office it has been placed at \$5,000,000, and at the highest \$6,000,000, while in the report of the Silver Commission it was given as a conjecture that the annual consumption of silver was \$10,000,000 in the United States for the arts and manufacturing purposes and \$50,000,000 in all countries outside of Asia.

In order to arrive at an approximate estimate of the consumption of gold and silver in the United States, I directed an examination to be made at the mints and assay-offices manufacturing fine bars, of their books for the last six years, and a report to be made of the amount of fine bars of gold and silver prepared and issued for manufacturing purposes.

The reports show that during the above period of time there were issued for manufacturing purposes \$21,879,040 of gold, and \$22,250,283 of silver, being an annual average consumption of gold bullion obtained from the New York assay-office alone of \$3,646,506, and \$3,708,380 of silver bullion.

The amount paid out at that office for these purposes during the last year was \$2,901,844 of gold, and \$4,482,975 of silver.

Fully one-half of the total bullion product of the country is parted and refined by private enterprise, and a considerable portion of the gold and silver used by manufacturers comes from such refineries. I have assumed that one-fourth of the total consumption for this purpose is of bullion other than New York assay-office bars. This is a moderate estimate for the additional amount, including, as it does, all supplies from private sources and refineries and bars issued by the coinage mints and by the other assay-offices.

I have attempted to secure further statistics of the consumption in the United States by addressing circular-letters to all manufacturers whose addresses I could obtain, who consume gold or silver in the preparation of chemicals and in the manufacture of jewelry, watch-cases, and other solid or plated wares. The circular referred to requested that they would specify the various forms of the metals used, whether United States coin, foreign coin, and old manufactured articles reworked or bullion. The replies that have been received, while incomplete as to the total consumption, are valuable in exhibiting the proportion of the different specified forms used, and also show that the gross amount would be in excess of estimates previously made.

COIN CIRCULATION OF THE UNITED STATES.

In preparing estimates of the amount of coin in the country, we have official records of the coinage and of the imports and exports of coin; we also have approximate returns of the amount of coin melted for manufacturing purposes. To complete the inquiry as to the coin circulation of the country, it is necessary to consider what amount of coin, foreign and domestic, may have been personally brought by immigrants, and, therefore, not reported by the Custom House. The secretary to the Commissioners of Emigration for the State of New York, H. J. Jackson, esq., states that 79,801 immigrants during the year 1878 landed at Castle Garden, and exchanged there \$520,000 of foreign coin. The average would be \$6.50 per individual, or \$32.50 per family. Assuming that an equally large amount of American coin, obtained by exchange at home, would be brought by immigrants, and also that a small amount of foreign coin not exchanged at New York would be taken by them to their place of destination, fifteen dollars may be estimated as the average sum brought by each immigrant and not reported in the custom-house returns.

The larger estimates heretofore made do not seem to distinguish between cash represented by drafts and bank bills, or even personal assets, all of which must be disregarded in statistics of coin importation; an official statement of the average "cash means" is too indefinite.

From the foregoing data I estimated in 1874 (Congressional Record, vol. 2, p. 2746) that the amount of coin in the country at the commencement of the calendar year 1873 was reduced to \$132,000,000, and stood at its close at \$143,000,000. This nearly coincides with the estimates of several statisticians made for the same period. The Director of the Mint in his first annual Report stated the coin then in the country (November 1, 1873,) to be about \$140,000,000, of which \$5,000,000 was silver.

The difference between my estimate and that made by the Director of the Mint is comparatively slight and may be accounted for by the difference in dates. I have thought it proper to take the latter as the basis for continuing the estimates, year by year, to the present time.

GOLD.

Fiscal year ending June 30—	Coinage, less coin deposited for re-coinage.	Net export or import of coin.	Gain or loss during the year.	Estimated amount of gold coin in the country at the close of the year.
1873.....				\$135,000,000
1874.....	\$34,853,411	\$7,620,605	*\$27,232,746	162,232,746
1875.....	30,727,862	52,628,351	121,000,480	140,332,237
1876.....	35,649,931	22,161,121	*13,161,121	153,493,358
1877.....	41,609,696	1,312,268	*40,387,428	193,880,806
1878.....	51,181,497	12,307,207	*38,548,764	247,429,570
1879.....	39,200,000	22,881	*39,001,128	286,496,698

SILVER.

	Coinage less coin deposited for re-coinage.
1877-78	\$3,713,334
1878-79	9,805,476
1879-80	18,980,405
1880-81	27,275,958
1881-82	27,841,127
1882-83	26,518,613
1883-84	
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This exceeds by \$86,206,852 the coin in the country at any other period, the highest previously having been in 1863, \$341,000,000, and next to that in 1857, \$315,000,000.

In addition to the stock of gold and silver coin there was, on October 31, in the mints and the New York assay-office, bullion awaiting coinage to the amount of \$49,931,035 of gold and \$4,553,182 of silver, which, added to the coin, would give as the amount of coin and bullion in the country October 31, 1879, \$355,681,532 of gold and \$126,009,537 of silver, a total of \$481,691,069.

Should the unprecedented flow of gold continue from foreign countries, unchecked by its reaction upon prices here and abroad, the metallic circulation of the country at the end of this fiscal year will have swollen to over \$600,000,000.

Such result, however, is not to be anticipated, nor, so long as our own mines supply in abundance the precious metals, is it desirable that the needful amount of metallic circulation should be obtained by the depletion of European reserves, to replenish which, at the first opportunity, the gold will be withdrawn as rapidly as it has been furnished, thus causing violent disturbance of monetary values, and uncertainty and embarrassment in commercial transactions.

Of the specie circulation on the 1st of November, the Comptroller of the Currency and the United States Treasurer report that \$198,859,332.16 were held by the national banks and the Treasury, leaving \$162,200,108.60 of gold and \$66,147,411.24 of silver in use by individuals, corporations, and private or State banking and other institutions.

The gold and silver was held and used as follows:

	Gold.	Silver.		Total.
		Legal tender.	Subsidiary.	
Treasury.....	\$119,920,670 40	\$32,532,702 00	\$17,856,898 76	\$170,310,271 16
National banks.....	23,628,718 00	.....	*4,919,343 00	28,548,061 00
Other circulation.....	162,200,108 60	12,673,498 00	153,473,913 24	228,347,519 84
Total.....	305,750,497 00	45,206,200 00	176,250,155 00	427,206,852 00

* Including standard dollars.

† Including trade dollars.

MONETARY STATISTICS OF FOREIGN COUNTRIES.

Replies have been received from a number of foreign countries to which inquiries were addressed respecting their coin and paper circulation, production of precious metals, coinage, movements of gold and silver, and amounts consumed in the arts and manufactures. The documents containing these statistics will be found in the appendix. *

Much of the information communicated is very valuable, and the representatives of the United States abroad and government officials or those nations from which replies were received are entitled to thankful acknowledgments for their promptness in responding to the inquiries.

A brief review and abstract of the interesting and useful facts elicited may be of advantage, and are here presented in connection with reliable data gathered from other authorities.

Great Britain.—The coinage of Great Britain during the calendar year 1878 was as follows:

Gold	£2, 132, 245 = \$10, 376, 571
Silver	614, 426 = 2, 990, 104

*The documents here referred to are omitted for want of space, but they are printed in the pamphlet copies of the Director's report.

And for the last ten years (1869 to 1878 inclusive):

Gold.....	£47,899,263 = \$233,101,763
Silver	6,182,154 = 30,085,452

The annual average coinage for the last ten years has been about \$23,000,000 of gold and \$3,000,000 of silver.

In the gold coinage for the years 1877 and 1878 of £3,230,986 nearly one-half, £1,557,500, was light gold coin sent from the Bank of England for recoinage.

Of silver coined at the mint during the year 1878 only £215,500 went to the Bank of England—the remainder going to Scotland, Ireland, and the colonies.

The amount of silver coin issued by the Bank of England to the public during the same year was £187,000, while the amount of worn silver coin withdrawn by the bank was £220,000. The withdrawals of worn silver coin by the Bank of England for recoinage during the last three years exceeded the value of the issues of silver coin to the public by that bank by £350,000, so that the silver coin in circulation in England and Wales alone was less by £350,000 (\$1,703,275) at the end of 1878 than at the beginning of 1876.

Accounts kept of the waste on £8,186,451 of gold coinage, completed in 1878, showed a loss of £543.6 per million, or .005436 per cent.; of which coinage £4,073,756, or 65 per cent., was light gold coin.

An examination of the last and preceding reports made by C. W. Fremantle, deputy master of the mint, shows that since 1860 silver has been coined of the nominal value of £9,140,094, and that during that period £2,951,120 of worn silver coin had been withdrawn and recoinage, making a net increase in the silver coinage of £6,188,974, and a recoinage of 32.3 per cent. of the silver coined during that period.

The total amount of silver coined at the British mint from 1816 to 1879 was £26,469,248, of which £13,573,900 was coined prior to 1848, since which the total amount of worn silver coin withdrawn was £3,983,338 = \$19,384,914.

The gold coinage since 1816 has been £241,936,664 = \$1,177,375,042.

Assuming the specie circulation of Great Britain to have been, as estimated by Mr. Fremantle, December 31, 1875, £118,560,000 of gold and £19,000,000 of silver, adding the coinage for the fiscal years 1876, 1877, and 1878 of gold £7,943,185, silver £1,257,300, deducting light coin withdrawn and recoinage for the same period, gold £2,196,075, silver £884,915, and adding the net excess of the imports of British gold coin over the exports for the same years, £2,810,951, and deducting the net excess of exports of silver coin over imports, £184,844, would make the circulation of specie on the first of the present year, gold \$618,620,043, silver \$93,376,169. Total, \$711,996,212.

Germany.—The adoption by the German Empire of gold as its monetary standard, in lieu of silver previously recognized and coined by the individual States, and the withdrawal and sale of the existing silver coinage, inaugurated a financial revolution which has attracted the general attention of all civilized nations, and unsettled values in almost every habitable part of the globe.

This action was apparently the primal cause of the recent unusual fluctuations in the relative values of gold and silver, and of the comparative depreciation of the latter, which has driven other European nations to close their mints against silver, and alarmed every country having a bimetallic system.

Nor could it have been otherwise, for within the last six years the new

German coinage has drawn from other nations and absorbed gold to the extent of \$382,411,368. Germany has not only ceased to be a customer for silver, but during the same period upon a market already fully supplied by increasing production, has thrown of her own stock of silver, at variable times and in variable quantities, a total amount up to May last of \$149,702,000, while there remain about \$113,288,000 of the old silver coinage not yet withdrawn, the fear of which still depresses the silver market.

The people of Germany have been sufferers in common with other nations from this general unsettling of values. The state itself in the change of its monetary standard, as yet but partially effected, has met a direct and considerable loss in the sale of the silver depreciated by its action.

The government sales of silver were suspended on May 19 last, and from late dispatches received from Mr. White, United States minister to Germany (in full in appendix), it appears that grave doubts exist in the Reichstag as to the wisdom and policy of the changes already made and of the withdrawal and sale of silver thalers remaining in circulation.

Herr Von Drehend, president of the Reichsbank, stated in debate in last June, that the loss from the withdrawal and sale of silver coin had already amounted to \$17,136,000, and that a further loss of from 19 to 23 million dollars would probably ensue by continuing the withdrawal and sale. He further said, in substance, that while being used to formidable calculations, and understanding well that reforms cannot be made in coinage without heavy sacrifices, he was startled by these figures, and believed there were but few present who did not share his feelings in that respect, and that he considered it to be his duty to strongly recommend to the imperial chancellor a suspension of the sale of silver, and that a real service would be done to the country and the whole world if no more silver was allowed to be sold and the silver market permanently saved from the fears of German silver.

From the report made to the United States minister on the 30th of August, 1879, it appears that the total gold coinage of Germany from 1871 to June 1, 1879, amounted to \$404,057,106, and subsidiary silver to \$101,851,957, and that for 1878 the gold coinage had been \$29,742,879, and the nominal value of the silver coinage was \$1,562,463.

The specie circulation at the close of the year 1878 amounted to \$328,168,462 of gold and \$214,939,957 of silver, of which \$113,288,000 were in pieces of the old coinage, making a total specie circulation of \$543,108,419.

At the end of May, 1879, the banks held in specie \$147,902,482.

The paper circulation of Germany amounts to \$229,596,234, of which \$38,817,300 were of government issue and \$190,778,934 bank circulation.

The production of the mines since 1875 has been as follows:

	Gold.	Silver.
1876	281 Kilo.	139,778 Kilo.
1877	308 "	147,612 "
1878	308 "	166,911 "

The Scandinavian countries.—The Scandinavian states—Norway, Sweden, and Denmark—have entered into a union similar to the Latin Union, gold being the standard and silver subsidiary.

Since this union was effected under the treaty of October 18, 1872, these countries have been engaged in changing their metallic currency from the single silver to the single gold standard.

The coinage of the countries named in pursuance of the Scandinavian monetary treaty amounted on July 1, 1878, to—

Countries.	Gold.		Silver.		Total.	
	Crowns.	Dollars.	Crowns.	Dollars.	Crowns.	Dollars.
Denmark	34,754,640	9,314,233	12,148,229	4,863,724	52,002,869	14,177,957
Sweden	31,000,910	8,331,290	11,643,553	3,120,471	42,730,463	11,451,761
Norway	9,436,650	2,520,022	4,520,000	1,211,360	13,956,650	3,740,382
Total	75,278,200	20,174,545	34,311,782	9,195,555	109,589,982	29,370,100

The net imports of gold into Denmark from 1871 to 1875 amounted to \$11,879,515, while the net exports of silver for the same period amounted to \$2,823,547.

Denmark sold, during the three years ended June 30, 1876, silver amounting to \$4,117,552. In changing from the silver to the gold standard Denmark has absorbed in five years gold to the value of \$11,879,515 and has disposed of, by export, silver of the value of \$2,823,547.

The circulation of the Scandinavian states has been estimated to be as follows:

Denmark.

Paper circulation	\$18,900,000
Gold circulation, including reserve in banks	20,000,000
Silver circulation, subsidiary	4,863,000
Total	43,763,000

Norway.

Paper circulation	10,300,000
Gold circulation, including reserve in banks	10,000,000
Silver circulation, subsidiary	1,200,000
Total	21,500,000

Sweden.

Paper circulation	11,680,000
Gold circulation, including reserve in banks	15,000,000
Silver circulation, subsidiary	3,120,000
Total	29,800,000

The Netherlands.—Holland, like the Scandinavian countries, has been changing from the single silver to the single gold standard.

The change began on the 1st of July, 1875. The imports of gold during the six years 1873 to 1878 exceeded the exports by \$20,282,911 and the imports of silver exceeded the exports by \$8,160,808.

The coinage of gold for the two years 1873 and 1874, prior to the change of standard, amounted to only \$195,400, while the coinage of silver during the same period amounted to \$1,913,722.

The coinage of gold during the four years 1875 to 1878, since the change of standard, amounted to \$23,666,601, while the coinage of silver during the same years amounted to only \$180,209.

During the year 1878 no standard gold coins were struck at the mint, but the coinage of gold consisted of the commercial pieces (ducats) of the value of \$199,250.

The circulation of Holland is estimated to be as follows:

Paper circulation	\$73,230,000
Gold circulation, including bank reserve	20,000,000
Silver circulation	57,600,000
Silver circulation, subsidiary	380,000
Total	151,210,000

Of the specie circulation nearly fifty millions is held by banks.

The circulation of France and the Latin Union.—An examination ordered in France and Belgium to ascertain the character, date of coinage, number and value of coin in circulation in those countries near the close of the year 1878, disclosed that 19,511 public offices in France held 1,009,559 pieces of gold coins valued at \$3,257,596 and 1,213,406 silver five-franc pieces of an approximate value of \$1,213,000.

In Belgium similar inquiries were made in regard to coins received in payment at the National Bank, its agencies, the state treasurer's at Brussels, and at all of the public offices of account.

From an analysis of the results of these examinations, it was estimated in the annex to the report made by the French commissioners to the Chamber of Deputies, that the number of five-franc pieces in circulation in the states of the Latin Union maintaining specie payments was as follows:

France.....	380,000,000
Belgium.....	55,000,000
Switzerland.....	30,000,000
Total.....	465,000,000

The French commissioners in conclusion say:

Such are the results reached by a careful examination. By these data the general circulation would be 5-franc silver pieces in circulation in the three states of the Union, 2,325 millions of francs. Divisionary silver with the afflux of Italian coins, 375 millions of francs. Gold coins, double of 5-franc pieces, 4,650 millions of francs; total, 7,350 millions of francs.

It seems to have been assumed that the gold circulation of France and the other States of the Union was double that of silver, and the amount of gold coin, \$3,257,596, found in the public offices in France, compared with the value of the five-franc pieces found in the same offices, if a proper basis for estimating the total circulation, would indicate a proportion of gold more than double that of silver.

But the proportion of gold and silver coins in circulation may be very different from the proportion of those coins in the Treasury. There were in the Bank of France October 5, 1878, \$226,700,000 of gold, and \$202,500,000 of silver, which would indicate not much more gold than silver in circulation. An active circulation may consist of silver rather than gold.

The Belgium investigation which was based upon the character and number of coins used in making payments showed a much larger proportion of silver than of gold. An examination of coins received in payment, instead of coins found in reserves and public offices, might have given different results in France.

While doubting the accuracy of the exhibit, in default of better data, the estimates given are accepted, and the circulation of France placed as follows:

	Francs.	Dollars.
Paper.....	2,418,419,689	466,755,000
Gold.....	3,800,000,000	733,400,000
Silver, unlimited tender.....	1,900,000,000	366,700,000
Silver, limited tender.....	306,450,000	59,144,850
Total.....	8,424,869,689	=1,625,999,850

The estimate of the specie in circulation in Switzerland furnished by the Vice-Chancellor is given at \$20,000,000, which, in addition to that in banks, \$12,000,000, would make the total specie circulation but \$32,000,000. This estimate is probably much too low, while that previously given submitted in the annex to the French report appears excessive, yet, as the

latter was the basis for official action for the respective governments, if rejected for one country it should be for all. I have, therefore, in compiling the table of circulation given in the appendix, used the calculation of the report to the French chamber of Deputies.

The remaining states of the Latin Union, Greece and Italy, have a forced paper circulation.

In Greece the paper circulation amounts to \$12,890,000, issued by the national and Ionian banks, while the reserve of specie held by these banks amounts to \$4,500,000. There is no mint in Greece, and its minor and subsidiary coins are supplied by the other states of the Latin Union.

The paper circulation of Italy amounts to \$135,000,000, while the specie reserve in banks is only \$17,000,000.

Austria.—The dispatches received from Minister Kasson are of great value, as they show that efforts are being made by this empire to return to a specie basis and maintain the integrity of its paper circulation, while preserving, as far as possible, a coinage and circulation of gold and silver.

The coinage during the year amounted to \$2,600,563 of gold, and \$13,906,258 of silver.

The paper circulation was \$322,938,854.

During the year the mines of Austro-Hungary produced 543½ ounces of gold, and 935,243½ ounces of silver.

Russia.—The information received through the Legation of the United States at St. Petersburg shows that the authorized paper circulation of the Bank of Russia and its branches amounted in January last to \$587,907,562, which has not materially changed to the present time.

The specie reserve held by the banks amounted on the 12th of June last to \$110,500,000, all of which, with the exception of about three millions of dollars, was in gold.

There are no official data in relation to the amount of gold and silver in circulation. There was produced from the mines of Russia in 1877: gold, 2,515 poods; silver, 1,202 poods; total, 3,717 poods; equal in weight to about 134,225 United States pounds.

Austria, Russia, Italy, and Greece, although their banks hold considerable specie, use for circulation depreciated bank-notes, and to resume specie payment would require large increase of gold or silver.

Their respective circulations, as far as attainable, are presented with those of other countries in a table accompanying this report.

Upon the estimate of 30 per cent. of coin reserve to paper issued, the amount required to resume and maintain specie payments over and above the present coin reserve of the banks, and not estimating the additional amount needed for general circulation, would be as follows:

	Paper circulation.	Bank reserve.	Required bank reserve.	Deficiency.
Austria.....	\$322,938,854	\$70,560,000	\$96,881,656	\$26,321,656
Russia.....	587,907,562	110,500,000	176,372,268	65,872,268
Italy.....	135,000,000	17,000,000	40,500,000	23,500,000
Greece.....	12,890,000	4,500,000	3,867,000	.....

No returns have been received from Spain, Portugal, and Turkey.

Portugal adopted the gold standard in 1851, while Spain has practically conformed her monetary system to that of the Latin Union.

The value of the gold coined in Spain from 1861 to 1875, inclusive, was \$140,291,716, and the value of the silver, \$48,425,615. The value of the gold coined in Portugal from 1855 to 1874, inclusive, was \$5,116,470, and of the silver, \$8,748,471.

The circulation of Spain and Portugal has been estimated to be as follows :

	Paper.	Specie, including bank reserves.
Spain.....	\$33,795,000	\$200,000,000
Portugal.....	20,529,000	85,000,000

Turkey has a greatly depreciated paper circulation, estimated at about \$100,000,000.

Africa.—But little information has been received from African countries. Two of them, West Africa and Algiers, conform their standards and circulations to the European nations of which they are dependencies, Great Britain and France.

There has been considerable gold imported into West Africa, the average amount during the last three years annually exceeding the exports \$1,250,000.

The imports of gold in fifty-four years were \$38,727,620, and the exports \$10,309,425.

The imports of silver for the same time were \$2,683,200 and the exports \$819,120.

Algiers has a bank circulation reported in July to be \$8,350,000, with bank reserves of \$3,270,000 in gold, and 2,623,000 in silver, making a total of \$5,893,000. The amount of coin in circulation was \$9,000,000.

In Morocco, no gold coins have been struck for 20 years.

The export of gold dust from 1871 to 1875 was \$8,900, and \$12,500 in silver coin have been exported annually.

Canada.—All of the colonies and dependencies of the British Empire, except the Asiatic, are supplied with silver coin by England. Canada has no mint, but silver coins of the denominations of twenty-five, ten, and five cents are provided by the home government. The gold coins in circulation consist principally of British coins.

Notes similar to United States notes are issued by the Dominion, the total amount of which in circulation on the 30th of April last was \$10,674,850.14. In addition to Dominion notes, the banks issue notes which amounted at the same date to \$18,372,892.45, while the total specie held by the banks amounted to \$6,291,285.48.

Mexico.—The circulation of this country consists principally of silver, bank notes being issued but by a single institution, and too inconsiderable to be noticed.

Both gold and silver are coined and exported in coin and bullion, although charged with an export duty of 5 per cent.

The coinage for the year 1878 was—

Of gold	\$689,688
Of silver	22,112,680

and for 9½ years has been \$8,456,601 gold and \$193,966,699 silver, averaging annually a coinage of nearly \$1,000,000 of the former and \$20,000,000 of the latter. Probably the average production has been about the same amount.

The exports for three years ending 1878 were gold \$6,388,535, silver \$58,373,039; indicating at this time a greater export of gold than the probable annual production, as estimated from the coinage.

Central and South America.—The information received in relation to the States of Central and South America is very meager, with the exception of Colombia.

In regard to the latter, Mr. Ernest Dichman, the United States minister resident, has furnished very complete information and tables of coinage and of imports and exports.

The bank-note circulation of Colombia at the close of the year 1878 amounted to \$1,895,343, of which the banks held \$362,042, together with specie reserves of about \$200,000 in gold and \$1,500,000 in silver. The total specie circulation of the country is reported as \$4,700,000, of which about \$4,000,000 is silver.

The production of the mines of Colombia is about \$1,000,000 a year in silver and varies between 3 and 5 millions a year in gold.

The coinage of the mints for the ten years ended August 31, 1878, was, gold, \$3,026,499; silver, \$2,195,591.

The exports of gold and silver during the same period amounted to \$19,775,210, while the imports of the same are reported as 79,780³⁴ kilograms; but as the gold and silver are not separated, the value cannot be ascertained.

The circulation of Venezuela consists principally of foreign coin, and in *Pera* paper has driven specie out of circulation. Its paper soles were quoted last July at 53 per cent. discount. The paper circulation is estimated at \$13,098,820.

No report has been received from Brazil, the only one of the South American States which adheres to the gold standard. Its paper circulation is estimated at \$91,000,000.

The Hawaiian Islands.—The amount of specie in circulation in the Sandwich Islands is reported by Mr. Morton, the chargé d'affaires *ad interim* at Honolulu, at \$800,000 in gold and \$500,000 in silver.

There is no paper currency, but certificates of deposit are issued by the treasury for coin deposited.

Australia.—As Australia is second only to the United States, of all the countries on the globe, in the production of gold, its monetary statistics are of great interest.

Mr. O. M. Spencer, the United States consul-general at Melbourne, has communicated information of importance in relation to the production of the precious metals and the circulation of the banks of Australia later than any officially published in this country.

The gold mines of Australia, like those of the United States, are yielding a diminished annual supply, the amount for 1877 being only about two-thirds of the production of 1873, and a still further reduction is reported in the yield for 1878.

The production for 1877 compares with the production for 1873 as follows:

	Ounces.	Value.
1873	2,243,372	\$42,779,908
1877	1,519,548	29,018,223
Decrease	723,824	13,761,685

The net exports of gold, although diminished, have not lessened in a corresponding ratio, owing probably to the large stock of gold in the country.

The circulation of bank notes for 2½ millions of people amounts to \$21,604,936, for which the banks hold a specie reserve of \$40,765,131.

Japan.—The Japanese Government, after some years' efforts to maintain a gold standard, on the 25th of May, 1878, made the silver trade dollar of 420 grains of their currency a legal tender in payment of all public and private debts. Being four grains heavier than the Mexican dollar, it was supposed, as was at one time believed in this country concerning our trade dollar of the same weight exported to China, that it would drive the Mexican dollar out of circulation.

The experience in regard to both the American and Japanese trade

dollars has been the same. Their bullion value being greater than that of the coin they were intended to supplant, instead of circulating to any considerable extent, they were melted and disposed of as bullion at their higher value.

In November the coinage of the Japanese trade dollar was suspended, and in its stead the coinage of the silver yen of 416 grains was commenced and has been since continued.

The coinage during the year ending June 30, 1878, was yen of gold 357,578 and of silver 4,310,345.

The total coinage of the mint at Osaka up to the 30th of June, 1878, is yen 82,785,397.63.

The exportation of coin and bullion from Japan from 1871 to 1878 has exceeded the importation by \$40,000,000, so that the country has comparatively but little coin in circulation; its paper having fallen from 8 per cent discount against gold in 1877 to 13 per cent discount against silver in October, 1878.

The paper circulation amounts to about \$143,000,000.

Asia.—Nothing has been received from the commercial agents or representatives of our government in India, and nothing of importance from any other Asiatic country. The absorption by those countries of the precious metals has been large and uninterrupted, and as the immense resources of India are further developed the influx and absorption of treasure must continue. Recent statistics of the import of treasure to Eastern nations, and especially to India, are presented in the appendix. From 1866 to 1878 the value of the merchandise exports of India was.. \$2,963,199,854
Merchandise imports 1,803,536,003

Excess of merchandise exports over imports \$1,159,663,851
Excess of treasure imports over exports 453,249,202

Leaving a balance of exports over imports of..... 707,414,649

Thus it appears that for the last twelve years the average annual import of treasure into India was \$45,500,000, and the average export for the same period \$7,700,000, making the average yearly gain of treasure \$38,000,000, by far the larger portion of which was in silver.

From July 1, 1873, to September 30, 1879, the exports of silver from the United States to China amounted to \$59,361,557, and during the same period about \$41,000,000 was exported from Europe to that country.

Asia, with nearly double the population of Europe and America combined, depends almost exclusively upon the Western Continent for its supply of the precious metals. The annual import into Asia and Egypt of silver for the last thirty years has averaged \$40,000,000.

At the beginning of the century, according to Humboldt, they took twenty-five out of forty-three millions of silver annually produced, and the remaining stock was insufficient to supply the requirements of silver for manufactures and change money. England in 1816, and the United States in 1853, depreciated their subsidiary silver coins, not on account of the excess, but from scarcity of silver and impossibility otherwise to retain their silver coins from export to the East. There is no reason to apprehend that the demand of India and China for silver will decline. During the last twenty-five years India has taken an average of \$38,000,000, and China \$9,000,000, making the average yearly absorption of silver by those nations \$47,000,000. It is not unreasonable to expect that their future requirements will fully equal that amount.

The silver coinage of India from 1835 to 1876 was equivalent to \$958,769,275, an annual average appropriation of silver for coinage during forty-two years of \$22,827,839, leaving \$15,000,000 of the total average import for ornamentation and other purposes.

SUMMARY OF THE STATISTICAL INFORMATION.

It seemed desirable to group and tabulate the recent and valuable information forwarded by our legations from foreign countries, although incomplete, and to indicate the present and probable future production, consumption in coinage and the arts, the demand and the supply of gold and silver in those countries.

The effort has been not to duplicate information already published and in the possession of the public, through the reports presented to Congress, and it is only reproduced when necessary to complete a summary of the statistics embracing the field of examination.

In some cases the figures are based upon estimates, but unless so indicated, they are taken from official dispatches and publications, or recognized authorities.

The exhaustive examination made by Dr. Soetbeer, published in the present year, shows the total production of the precious metals in all countries since the discovery of America, the comparative values of gold and silver during that period, and their coinage since the year 1850.

What is presented here will merely supplement the information contained in that publication, and that presented in the report of the Silver Commission of 1876, and of the International Convention, lately published by Congress.

The statistics contained in those reports, as far as used, have, when practicable, been compared with the official reports, with the dispatches and later information presented in the Appendix, and with the official publications at the command of this office.

WORLD'S PRODUCTION OF GOLD AND SILVER.

The information in relation to the production of the precious metals contained in the dispatches received is so meagre that no correct estimate of the world's production can be based upon it for the last or preceding year.

The annual supply of gold, which reached its height in the year 1856, has very largely declined within the last few years, as will be seen from the following table of the production of gold in the three countries which produce about four-fifths of the world's supply:

GOLD.



* Estimated.

A table is presented in the Appendix, taken from the publication of Dr. Soetbeer, the eminent German statistician, showing the estimated annual production of gold and silver for a series of years. This estimate is higher than many of those heretofore published.

It is safe to say that the production of gold during the last year was

less and the production of silver considerably greater than the annual average given by Dr. Soetbeer for 1871-1875, viz:

Gold.....	\$113,432,300
Silver.....	81,849,300
Total	195,281,600

THE WORLD'S CONSUMPTION IN ARTS, MANUFACTURES, AND ORNAMENTATION.

The official dispatches contain but little additional information on this subject, except in continuation of statistics heretofore published.

Articles containing or composed of gold or silver are required in France to be examined and marked by a bureau of guarantee, and the quantity of gold or silver contained is registered. In the last twenty-four years, the value of gold in the articles thus registered was \$222,140,729, and of silver \$81,423,938, being an annual average of \$9,255,863 of gold, and \$3,392,664 of silver.

An examination of the law shows that the articles are permitted to be of three standards of fineness for gold, namely, 920, 840, and 750 thousandths, a mean fineness of 837 thousandths, and of two standards for silver, 950 and 800, making the mean fineness of the latter 875. The statement of the value of the gold and silver thus used in France would have to be correspondingly diminished were it not that much gold and silver used and dissolved for chemical and electro-plating purposes, and probably that made into gold or silver leaf, are not stamped or recorded; and the annual consumption probably fully equals the figures given for the last year.

Gold.....	\$10,817,006
Silver	3,250,046
Total	14,067,052

Upon these data, an approximate estimate can be made of the consumption of precious metals in countries similarly situated, especially on the continent of Europe. Other data of the excess of imports over exports of precious metals into countries not using them for coinage, as, for instance, India, where the imports of gold in forty years have exceeded the exports by more than \$400,000,000, of which only \$3,000,000 have been coined as money, are thought to indicate a large annual absorption and consumption of the precious metals in every country.

From the data thus furnished and from inability to account for the disappearance of a large excess in imports over exports of the precious metals in other countries, except that they had been used in manufactures and arts, computations have been made of the amount consumed for these purposes in such countries and in the world.

If, however, all civilized countries used as large an amount proportioned to their population as France and the United States, the world's annual supply would not suffice, and nothing would be left for new coinage. It is a very moderate estimate that the remaining countries of Europe and America, containing fourfold the population and including nations wealthy, powerful, and far advanced in manufactures and the arts, consume twice as much as France and the United States, and to place the total consumption of Europe and America for these purposes at from 45 to 55 millions of gold and from 25 to 35 millions of silver. The use of silver would be proportionally greater and of gold less in other countries than the proportionate consumption of those metals in France and the United States.

STATISTICS OF COINAGE.

The future use or annual appropriation of silver and gold is so uncertain that opinions and conjectures are of little value.

The coinage of gold is open for depositors at the mints in almost every country of the Western World, while silver has, with few exceptions, been excluded, except on government account.

A table is presented in the Appendix showing the value in United States money of the coinages of the various countries of the world, as far as they could be ascertained, for the last four years, separately. While this table is valuable as showing the work performed by the mints of the countries issuing metallic money, it does not accurately show the amount each country has added to its stock of coined money, for a considerable portion consists of recoinage of existing coins.

Where official records of specie imports and exports fail to distinguish coin from bullion, the coinage statistics of a country furnish imperfect and insufficient data for estimating its metallic circulation, except for short periods after a change in its coinage and the demonetization of pre-existing coins.

It is evident that the aggregate coinage of all the countries for a single year or given period must far exceed the actual addition to the world's stock of coined money for the same time; for the coinage in every country is largely manufactured from newly-coined money imported and withdrawn from the circulation of other countries.

In ascertaining the value of silver both in this and the other tables presented in the appendix, the coinage rate of the standard silver dollar has been taken as the basis of the computations.

As shown by the table of coinages, the total coinage of several of the principal countries of the World for the last few years has been:

Year.	No. of countries.	Gold.	Silver.	Total.
1875.....	20	\$195,987,428	\$119,915,467	\$315,902,895
1876.....	16	213,119,278	126,577,104	339,696,442
1877.....	12	173,675,555	78,402,648	252,078,203
1878.....	13	161,605,522	73,613,342	235,218,864

The closure of European mints to the free coinage of silver has lessened the amount of that metal coined, and its coinage will be comparatively light, unless nations now under suspension of specie payments undertake to resume and use silver more freely for that purpose. The annual consumption by Great Britain for fractional coinage indicates that only about fifteen millions would be required by Europe for coinage should gold become the single standard of that continent, and five millions would suffice to renew the subsidiary coinage of America should silver be demonetized in this continent also.

STATISTICS OF CIRCULATION.

The paper circulation of commercial countries is ascertained without much difficulty, as the issues of governments and banks are generally given in official reports.

The specie in circulation in the world at any given year or period, or even in a particular country, cannot be accurately ascertained, and must in part be estimated. Approximate figures may be given, but no statistician will claim exactness.

The opinions of the best and latest authorities attainable have been collated, and are presented in a table with late official statements of paper circulation or approximate estimates.

The aggregate circulation of twenty-four States, with a population of 446,699,890, is as thus reported and estimated:

Paper.....	\$3,306,480,151
Gold.....	2,685,691,372
Silver (full legal tender).....	813,912,303
Silver (limited tender).....	310,247,960
Total.....	7,116,331,786

which shows a per capita circulation of \$15.93, of which \$7.40 is paper and \$8.53 metallic. The per capita circulation of gold is \$6.02, of full legal-tender silver \$1.82, and of limited tender silver \$0.69.

In nine of these countries, having a paper circulation of \$1,407,335,236, specie payments have been suspended, and some of them use largely base metals for fractional currency, of which no account has been taken.

COURSE OF PRICES.

The discovery of the gold mines of California and Australia, and outpouring of their mineral wealth to that of the Old World, excited an apprehension in Europe lest an oversupply of silver and gold might diminish the purchasing power of money, disturb values, and inflate prices.

The large production of the precious metals in the last few years has been measurably absorbed by increasing wealth, wider commerce, and the more frequent interchange of commodities.

Notwithstanding the large additions to the monetary supply by the Comstock Lode, the prices of commodities measured in silver as well as gold have lowered. This may in part be accounted for by the change in several European countries from the silver to the gold standard.

The Director of the Mint, in his report for 1873, predicted that "the gradual adoption of the gold standard and consequent demonetization of silver will, of course, be followed by an increase in the value of gold, or, what is the same thing, a decrease in the price of articles measured by it."

Sufficient time has elapsed since 1873 to verify this prediction and to permit an examination of the course of prices which it may be profitable to trace through the last six years.

The prices of the exports of a country are usually regulated by the prices in the markets of the world, are least disturbed by local influences and best suited for such comparisons. The exports of this country for the last ten years, dividing value by quantity of each article, give the yearly average export price.

Rejecting a few articles of which the small quantity exported or variable quality afford no fair criterion, there remain eighty articles comprising 84 per cent. of the value of the merchandise exports of last year.

The results of a comparison of the price of each article in subsequent years with its price in 1870, added and averaged for each year, afford an indication of the general rise or fall of prices; that is, the purchasing power of money in this country for each of the ten years. Such examination shows a rise in gold prices from 1870 to 1874 and subsequent de-

prices in each year to the prices of 1870 being in United gold as follows:

Comparative currency prices of exports with their like price in 1869-'70.	Comparative gold prices of exports with their like price in 1869-'70.	Comparative purchasing value of United States notes with their like value in 1869-'70, as measured by the prices of United States exports.	Comparative purchasing value of gold with its like value in 1869-'70 as measured by the prices of United States exports.	Comparative purchasing value of silver.
\$1 00	\$1 00	\$1 00	\$1 00	\$1 00
95.6	1 04.7	1 04.6	95.5	95.7
95.3	1 04.8	1 04.9	95.4	95.15
98.7	1 06.5	1 01.3	97.8	92.8
99.1	1 09	1 00.9	91.7	89.1
91.9	1 00.2	1 08.8	99.8	94.8
85.5	92.4	1 16.9	1 08.2	98.2
82.5	94	1 21.2	1 06.3	95.7
73.9	88.7	1 35.3	1 12.7	1 00.0
67.7	86	1 47.7	1 16.2	97.9

The year 1869-'70 are nearly the average prices for the five decades preceding the year 1879, namely, 1829, and 1869.

has not been made, and it may be impossible to ascertain prices of the fiscal year 1869-'70 are average prices in the last fifty years or during the century; but the prices as given in English statistical authorities are about the closing year of five preceding decades, except 1849. The prices in Europe, combined with those of American prices, show the following comparative prices of commodities and purchasing power of gold and silver for the last

	Prices of commodities in—		Purchasing value (measured by commodities) of—	
	Gold.	Silver.	Gold.	Silver.
	\$100	\$100	\$100	\$100
	102.2	101.1	97.9	98.9
	104.8	105	95.4	95.3
	106.4	107.7	94	92.9
	104.6	107.7	95.6	92.9
	98.3	103.3	101.8	96.8
	96.3	106.1	103.8	94.2
	95.9	107.6	104.3	93
	91.6	103.2	109.2	96.9
	86.7	103	115.3	97.1

are the average prices taken from statistical authorities named of American exports and leading English except for the last two years of French imports and state as to those countries the comparative average of gold and silver respectively during the ten years. The prices indicate a rise in the value of money measured in Europe, and especially during the last year in this movement of the precious metals to this country. A decline in prices may be expected on the Continent, the United States.

PRESENT MONETARY SITUATION.

It may be asserted with reasonable confidence and to the present monetary situation.

As general prices have not advanced above those of fifty years ago the annual supply of the precious metals, although increased fivefold, is not excessive nor more than sufficient to satisfy the world's present needs for coinage and manufactures.

The larger production has been absorbed and required by the growing wealth, commerce, and population of civilized nations, and has not inflated prices by depreciating the value of money.

Probably one-half of the gold and one-third of the silver annually obtained from the mines are consumed in manufactures and the arts, and from one-third to one-half of the silver and the remainder of the gold are appropriated, and under present legislation will be required, for coinage in Europe and America, while the vast populations of India and China will continue to absorb the surplus of silver as heretofore during the century in varying amounts from 20 to 40 millions of dollars.

Should the free coinage of silver at a fixed valuation with gold be established by international agreement and suitable legislation, no excess of silver above the needs for coinage, manufacture and Eastern export may be feared, and silver from such universal legal power equally with gold to discharge indebtedness, and the necessity for its use for the smaller denominations could not materially fall below the comparative valuation that may be agreed upon.

Should the \$650,000,000 of silver coins now permitted to circulate as full legal tender in Europe be demonetized consequences will follow more disastrous to the stability of silver and all monetary values than have attended its partial exclusion from European circulation, and its immediate further depreciation would pour the whole supply upon nations willing to receive and use it as money. Silver would become almost their exclusive circulation.

The United States could not single-handed among commercial nations, with no European co-operation or allies, sustain the value of silver from the inevitable fall.

If European nations continue to decline overtures for an international agreement in regard to the coinage of silver, the expediency of opening our mints to the free coinage of their present stock of silver and inviting its speedy demonetization or export here is questionable.

The true policy of this country is such conservative action as will tend to bring the values of gold and silver to their former relations, upholding the one and preventing the appreciation of the other until it can be determined whether commercial nations are willing that both metals should be yoked for equal monetary service.

But in case the use of silver as money must be abandoned, it is gratifying to believe that the vast resources, the agricultural and mineral wealth, the present development of mining and manufacturing interests and facilities for inland commerce, the comparative lightness of taxation and relief from heavy foreign indebtedness, and, above all, the productive genius, industry, inventive skill, and capacity of the people of the United States will enable them to retain, or as now, draw from abroad the gold needed for their monetary use, and that the commercial disasters and depression threatened or feared as the result of restricting the commercial world to one metal are more likely to fall upon the nations that initiated, and are responsible for, the movement.

I am, very respectfully,

HORATIO C. BURCHARD,
Director of the Mint.

Hon. JOHN SHEERMAN,
Secretary of the Treasury.

REPORT OF FIRST COMPTROLLER OF THE TREASURY.

TREASURY DEPARTMENT,
FIRST COMPTROLLER'S OFFICE,
Washington, D. C., November 8, 1879.

SIR : In compliance with the request contained in your letter of September 11, 1879, I have the honor to submit the following report.

The transactions of this office during the fiscal year which ended June 30, 1879, will be first presented.

* * * * *

ASSIGNMENT OF CLAIMS.

By a statute enacted in 1853, the substance of which has been inserted in the Revised Statutes, it was declared that all transfers and assignments made of any claim upon the United States, or of any part or share thereof, or interest therein, whether absolute or conditional, and whatever might be the consideration therefor, should be absolutely null and void, unless they were freely made and executed in the presence of at least two attesting witnesses, after the allowance of such a claim, the ascertainment of the amount due, and the issuing of a warrant for the payment thereof.

In the same year a circular was issued by Mr. Comptroller Whittlesey defining the term "claim" as employed in the clause above recited. The circular instanced many examples of what might be regarded claims, and what would not be regarded such within the meaning of the statute, and summed up with the conclusion that ordinary debts and accounts against the government which had been legally contracted and never disputed, are not claims within the meaning of this statute, and that the statute applies only to uncertain damages and losses, extra allowances, pensions, equitable demands, claims for the correction of alleged errors, claims for a return or repayment of duties, items of account which have been rejected, or are disputed, and such classes of cases as in Congress are usually referred to the Committee on Claims, and to committees other than the Committee of Ways and Means. The term claim was thus held not to have been employed in its most comprehensive sense. The construction thus given to the statute has been steadily maintained in the Treasury Department for more than twenty-five years.

In the case of the *United States vs. Gillis*, decided at the October term of the Supreme Court of the United States, 1877, that learned court said that the words of this statute "embrace every claim against the United States, however arising, of whatever nature it may be, and wherever and whenever presented" (95 U. S., 407). And in the later case of *Spofford vs. Kirk*, decided at the October term, 1878 (97 U. S., 484), that court, referring to the same statute, said :

It would seem to be impossible to use language more comprehensive than this. It embraces alike legal and equitable assignments. It includes powers of attorney, orders, or other authorities for receiving payment of any such claim, or any part or share thereof. It strikes at every derivative interest, in whatever form acquired, and incapacitates every claimant upon the government from creating an interest in the claim in any other than himself.

It is proper to state that the right of action in the first-mentioned case was founded on an assignment of a claim to recover the proceeds of cotton seized under the Abandoned and Captured Property Act

of March 12, 1863, and the second upon an assignment of a claim against the United States for supplies furnished to the Army during the war of the rebellion, and that neither claim, therefore, was for a sum liquidated and unchallenged; so that, in case of a suit upon an assignment of a demand of the latter character, it is possible that that learned court might not feel authoritatively bound by the comprehensive language employed in the two cases above cited.

The inconveniences that would be felt from a construction of this statute which would give to the term claim a signification as broad as the term demand would be very great. Illustrations of these inconveniences would too much lengthen this report. They are detailed at length in the circular of Mr. Whittlesey. The cases above cited have occasioned much anxiety to the accounting officers. I think the attention of Congress ought to be called to the statute, and that it ought to be invited to define the term claim in such manner as, while perhaps limiting it a little more closely than has been the practice of the Treasury, would not leave it so comprehensive as to embrace every demand against the United States.

LOST AND DESTROYED BONDS.

Section 3702 of the Revised Statutes enacts that whenever it appears to the Secretary of the Treasury, by clear and unequivocal proof, that any interest-bearing bond of the United States has, without bad faith upon the part of the owner, been destroyed wholly or in part, or so defaced as to impair its value to the owner, and the bond is identified by number and description, the Secretary shall, under such regulations and with such restrictions as to time and retention for security or otherwise, as he may prescribe, issue a duplicate thereof, &c.; or, if the bonds have been called in for redemption, instead of issuing a duplicate, it shall be paid. The next section enacts that the owner shall file in the Treasury a bond, in a sum prescribed, with two good and sufficient sureties, residents of the United States, to be approved by the Secretary, with condition to indemnify and save harmless the United States from any claim upon such destroyed or defaced bond.

Applications for duplicates, or for the redemption of such bonds, are referred, under regulations prescribed by the Secretary of the Treasury, to the First Comptroller, to be decided upon by him.

It will be perceived that bonds payable to bearer come within the terms of this statute; and the practice has been to issue duplicates for, or to redeem, bonds of this character alleged to have been destroyed, upon evidence furnished by affidavits taken before certain prescribed officers of the United States. The redemption of such bonds and the issuing of duplicates have always been refused until after the lapse of six months from the filing of an application; but even with this precaution the statute is fraught with great danger to the Treasury. In practice it has been found that in fully half the cases where evidence has been offered to establish the fact of destruction, the bonds have not been destroyed, but have passed either by theft or collusion into the hands of other holders. When a bond of this kind is lost or stolen, the owner who has been deprived of it is apt soon to persuade himself that it has been destroyed, as only in case of its having been destroyed can he entertain reasonable hope of ever receiving payment. Instances also have occurred of persons offering most impressive evidence of the destruction of bonds alleged to have been owned by them, who, subsequent events have shown, had no title to them whatever. Great vigi-

person whose salary, pay, or emoluments are fixed by law or regulations, shall receive any additional pay, extra allowance, or compensation, in any form whatever, for the disbursement of public money, or for any other service or duty whatever, unless the same is authorized by law, and the appropriation therefor explicitly states that it is for such additional pay, extra allowance, or compensation. It has been steadily held under these several provisions that to no officer or clerk performing additional services in the same line of duty or performing duties which belong to another officer or clerk, can an extra allowance or compensation be made for such additional service; but the Attorney-General has expressed the opinion in several instances where his opinion has been requested, that an officer or clerk who holds two distinct commissions, or exercises an employment independent of and distinct from his duties as such officer or clerk, may be paid the salary of both offices or compensation for such additional employment, if the salary of such officer or clerk under the first appointment does not exceed twenty-five hundred dollars, and if there is an appropriation out of which payment may be made for this class of work or service, though the statute may not provide for payment of additional compensation to such officer or clerk by name or other identification. It is not meant to call in question this construction of the statute, which, so long as the case of *Converse vs. The United States* (21 Howard, 463) shall be regarded authoritative, cannot well be avoided; but in giving effect in one or two instances in the adjustment of accounts, to this interpretation, I have not been able to free myself from a lurking suspicion that it was not in harmony with the intention of the framers of these provisions. I deem it proper that the attention of Congress shall be drawn to the manner in which these sections are construed in the particulars mentioned, in order that, if the construction is not satisfactory, the statute may be made more perspicuous.

Incidentally, in this connection, it deserves to be remarked that the provisions of Title Four of the Revised Statutes, entitled "Provisions applicable to all the Executive Departments," seem, where the term department is used, not to be applicable to the Department of Agriculture, the departments to which the statute shall apply being specifically mentioned, and the Department of Agriculture being omitted. In the careful work of Mr. Elmes on the Executive Departments, recently published, he coincides with the view of this office in this interpretation. In this title several important provisions not now applicable to the Department of Agriculture occur, respecting the salaries of clerks and other matters, which it is difficult to believe that Congress did not accidentally omit to make applicable to that department.

DISTRICT OF COLUMBIA.

The differences between the Commissioners of the District of Columbia and the officers of the Treasury charged by law with the examination of their accounts, have, with one or two exceptions, been harmoniously adjusted. These exceptions relate chiefly to the question whether the Commissioners or the Treasurer of the United States has the authority to make requisitions for certain classes of advances. The intention of Congress in the statutes relating to the District under its new organization has in several instances been imperfectly expressed, and differences of construction have arisen in a candid effort upon the part of the Commissioners and the accounting officers to collect the intention of Congress from phrases fairly susceptible of two interpretations. If, in a very few particulars, Congress shall by amendatory leg-

lation express its meaning in more perspicuous phraseology, entire harmony of construction may be made to prevail between the Commissioners and accounting officers, and the affairs of the District by their cheerful co-operation may be frugally and carefully conducted.

NATIONAL BOARD OF HEALTH.

Important provisions in the several acts relating to the National Board of Health have been referred by you to this office for construction. A liberal construction has in every instance been recommended to carry out the beneficent ends contemplated by Congress, but a strict one has been maintained in relation to proof that the moneys claimed to have been disbursed have been actually expended, and disbursed for the purposes provided by law. It is pleasant to be able to say that the rulings made by this office have been kindly and hospitably received by that most intelligent board, and that the expenditures of the board—though moneys have never been withheld by it where it was deemed that they could be legally and usefully employed—have thus far exhausted less than a fourth of the appropriations made by Congress.

I beg to renew my commendation of the chiefs of division, clerks, and other persons employed in this bureau for the intelligence and fidelity with which they have performed their duties.

I have the honor to be, very respectfully,

A. G. PORTER,
First Comptroller.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF SECOND COMPTROLLER OF THE TREASURY.

TREASURY DEPARTMENT,
SECOND COMPTROLLER'S OFFICE,
Washington, October 13, 1879.

SIR: In compliance with your request by letter of the 11th ultimo, I submit herewith a summary statement of the business done in this office during the fiscal year which ended on the 30th day of June, 1879.

The following table shows the total number of accounts and claims revised and adjusted, with amounts allowed thereon; also referred and other cases settled that do not involve a present expenditure:

From—	Number revised.	Amounts.
Second Auditor	8,872	\$22,107,337
First Auditor	8,009	42,642,216
Third Auditor	1,727	10,277,774
	18,608	81,027,327
Other sources, not involving present expenditure	2,311	2,244,230
Total number and amounts involved	20,919	83,271,557

The following tables furnish a more detailed statement of the same number and claims, showing the number revised and adjusted, the character of the same, the amounts allowed, and the source from which they were received:

Accounts revised during the year.

Character of accounts.	Number revised.	Amounts.
From the Second Auditor:		
1. Of Army paymasters, for pay of the Army, including mileage to officers and general expenses	442	\$13, 416, 286
2. Special accounts, including ordnance, medical, recruiting, and contingent expenses of the War Department	2, 139	1, 562, 620
3. Of agents of Indian affairs, for the current and contingent expenses of the Indian service, including annuities and instalments under treaties	2, 526	6, 737, 274
Total	5, 107	21, 736, 180
From the Third Auditor:		
1. Of disbursing-officers of the Quartermaster's Department, for the regular supplies and incidental expenses	1, 010	10, 393, 598
2. Of disbursing-officers of the Subsistence Department	631	2, 018, 067
3. Of disbursing-officers of the Engineer Department, for military surveys, the construction of fortifications, river and harbor surveys and improvements	110	3, 532, 251
4. Of pension-agents, for the payment of pensions, &c	269	21, 563, 541
Total	2, 020	28, 437, 457
From the Fourth Auditor:		
1. Of the disbursing-officers of the Marine Corps	7	551, 846
2. Of the paymasters of the Navy proper	147	4, 499, 145
3. Of paymasters of the Navy Department at the navy yards	84	6, 330, 342
4. Of paymasters of the Navy acting as navy-agents and disbursing-officers	14	3, 612, 036
5. Of Navy pension-agents, for the payment of pensions to the invalids of the Navy and Marine Corps	68	776, 631
6. Miscellaneous naval accounts	91	289, 750
7. Financial agents	4	46, 628
Total	415	16, 106, 378

Claims examined and allowed during the year.

Character of claims.	Number revised.	Amounts.
From the Second Auditor:		
1. Soldiers' pay and bounty	3, 765	\$371, 157
From the Third Auditor:		
1. Lost property, under act of March 3, 1849	364	54, 420
2. Miscellaneous, including quartermaster's, commissary, and transportation	5, 573	3, 996, 581
3. Oregon and Washington Territory Indian war-claims	45	23, 634
4. State war-claims	5	130, 112
Total	5, 989	4, 204, 759
From the Fourth Auditor:		
1. Sailors' pay and bounty	1, 071	159, 095
2. Prize-money	241	12, 301
Total	1, 312	171, 396
Cases not involving present expenditure:		
1. Duplicate checks	404	19, 363
2. Financial agents (Navy)	4	2, 224, 867
3. Referred cases	1, 903	
Total	2, 311	2, 244, 230

Bonds filed	116
Contracts filed	2, 030
Letters written and copied	1, 541
Requisitions recorded during the fiscal year	17, 349
Settlements recorded during the fiscal year	8, 929
Differences recorded	6, 251
Clerks employed during the fiscal year	54

In addition to the labor above classified, a variety of incidental investigations and other duties have been performed, requiring careful and

skilled labor, that cannot be summarized without extending this report to an unreasonable length.

It affords me pleasure to be able again to bear testimony to the ability, fidelity, and industry of the Deputy Second Comptroller, Mr. James S. Delano, the chiefs of division and clerks of the office by whom this work has been accomplished.

Very respectfully,

W. W. UPTON,
Comptroller.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE COMMISSIONER OF CUSTOMS.

TREASURY DEPARTMENT, OFFICE OF COMMISSIONER OF CUSTOMS, *Washington, October 13, 1879.*

SIR: I have the honor to submit herewith, for your information, a statement of the work performed in this office during the fiscal year ending June 30, 1879:

Number of accounts on hand July 1, 1878.....	249
Number of accounts received from the First Auditor during the year.....	6,316

	6,565
Number of accounts adjusted during the year.....	6,254
Number of accounts returned to First Auditor.....	12
	6,266

Number of accounts on hand June 30, 1879.....	299
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There was paid into the Treasury from sources the accounts relating to which are settled in this office—

On account of customs.....	\$137,250,047 70
On account of marine-hospital tax.....	359,646 85
On account of steamboat fees.....	270,405 57
On account of fines, penalties, and forfeitures.....	163,513 06
On account of storage, fees, &c.....	748,880 04
On account of deceased passengers.....	100 00
On account of emolument fees.....	187,889 26
On account of mileage of examiners.....	579 20
On account of interest on debts due.....	25,521 14
On account of rent of public buildings.....	9,048 15
On account of relief of sick and disabled seamen.....	602 56
On account of proceeds of government property.....	6,566 11
	139,022,799 64

And there was paid out of the Treasury:

On account of expenses of collection.....	\$5,485,543 87
On account of excess of deposits.....	1,924,246 31
On account of debentures.....	4,931,133 23
On account of public buildings.....	2,490,889 14
On account of construction and maintenance of lights.....	2,342,664 14
On account of construction and maintenance of revenue-cutters.....	850,224 47
On account of marine-hospital service.....	374,950 50
On account of life-saving stations.....	501,965 62
On account of compensation in lieu of moieties.....	42,109 51
On account of relief acts.....	15,774 50
On account of seal fisheries in Alaska.....	19,063 30
On account of metric standard weights and measures.....	3,448 75
On account of settlement of disbursing officers' accounts.....	38,505 54
On account of debentures and other charges.....	2,521 49

On account of refunding duties.....	\$12 19
On account of refunding fine to B. Maddock, owner of schooner Ocean King.....	45 00
On account of refunding duties to Saint Michael's Church.....	1,588 65
On account of unclaimed merchandise.....	761 26
On account of distributive shares, fines, penalties, and forfeitures...	5 37
	<hr/>
	19,025,452 84

The number of estimates received.....	3,294
The number of requisitions issued.....	3,293
The amount involved in requisitions.....	\$15,703,669.53
The number of letters received.....	10,685
The number of letters written.....	11,232
The number of letters recorded.....	11,381
The number of stubs of receipts for duties and fees returned by collectors.....	179,179
The number of stubs examined.....	148,144
The number of stubs of certificates of payment of tonnage dues received and entered.....	9,756
The value of postage-stamps used.....	1.46
The number of returns received and examined.....	13,782
The number of oaths examined and registered.....	4,334
The number of appointments registered.....	3,278
The average number of clerks employed.....	30

I inclose herewith a statement of the transactions in bonded goods during the year ending June 30, 1879, as shown by the adjusted accounts.

I am, very respectfully, your obedient servant,

H. C. JOHNSON,
Commissioner of Customs.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE FIRST AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,
FIRST AUDITOR'S OFFICE.
Washington, October 30, 1879.

SIR: I have the honor to submit the following exhibit of the business transacted in this office during the fiscal year ending June 30, 1879.

Accounts adjusted.	Number of accounts.	Amount.
RECEIPTS.		
Duties on merchandise and tonnage.....	1,288	\$123,883,235 55
Steamboat fees.....	1,045	263,045 45
Fines, penalties, and forfeitures.....	837	164,284 03
Marine-hospital money collected.....	1,409	354,376 30
Official emoluments of collectors, naval officers, and surveyors.....	1,262	616,045 57
Moneys received from sale of old materials, rents, &c.....	164	30,440 14
Miscellaneous receipts.....	765	872,991 16
Moneys received on account of deceased passengers.....	18	100 00
Internal and commercial intercourse fees.....	1	2,842 92
Treasurer of the United States, for moneys received.....	4	668,363,795 52
Mints and Assay Offices.....	28	120,059,008 31
Manufacture of medals.....	1	8,639 47
Moneys retained from Pacific Railroad companies (interest account).....	12	1,564,913 09
Water-rents, Hot-Springs, Arkansas.....	4	7,054 38
Receipts on counter-warrants.....	259	404,987 78
Total.....	7,207	917,547,049 78

Accounts adjusted.	Number of accounts.	Amount.
DISBURSEMENTS—Continued.		
Suppressing counterfeiting and fraud	40	\$90,716 28
Reproducing plate of surveys, General Land Office	1	6,370 00
Registered interest accounts	49	17,107,243 52
.....	23	5,110,305 08
.....	104	35,021,070 87
.....	1	420,000 00
.....	8	47,550 00
.....	4	494,650 00
.....	1	29,400 00
.....	22	150,783,008 25
.....	6	18,623,583 22
.....	56	21,429 33
.....	8	47,895,300 00
.....	9	54,105,000 00
.....	8	7,856,470 00
.....	13	74,228,070 00
.....	12	1,265,031 08
.....	2	273,800 00
.....	23	1,050,980 87
.....	77	385,477 18
.....	6	0,000 00
.....	41	5,526,063 11
.....	129	31,103 22
.....	220	187,715 85
.....	48	124,208 28
.....	101	40,078 05
.....	74	104,509 81
.....	96	224,970 76
.....	17	843,738 97
.....	35	69,570 45
.....	3	1,000 00
.....	7	14,872 39
.....	100	1,007,753 49
Construction of court-houses and post-offices	364	1,279,115 29
Construction of subtreasury building, San Francisco	5	15,196 18
Construction of appraisers' stores	18	98,103 08
Construction of building for State, War, and Navy Departments	14	245,087 84
Construction of light-houses	207	230,186 72
Construction of light-house depot, Thirteenth district	5	2,129 80
Construction of building for Bureau of Engraving and Printing	8	40,792 34
Construction of jail for the District of Columbia	8	1,545 46
Plans for public buildings	6	2,001 82
Completion of Washington Monument	4	39,026 41
Repairs and preservation of public buildings	125	116,402 08
Repairs, lighting, &c., Executive Mansion	10	40,891 42
Annual repairs of the Capitol	6	50,327 82
Annual repairs of the Treasury building	13	12,301 51
Repairs of the Interior Department building	3	2,873 39
Reconstructing Interior Department building	3	4,269 57
Reconstructing Interior Department building, plans for	1	600 00
Repairs to building on Tenth street	3	358 57
Rent of buildings in Washington	23	59,681 62
Fuel, lights, and water for public buildings	40	322,437 21
Fuel, lights, &c., Interior Department	6	10,632 80
Furniture and repairs of same for public buildings	34	49,452 68
Furniture and repairs of same for Court of Claims	3	1,550 00
Furniture, contingencies, &c., office of Commissioner of Pensions	1	308 10
Furniture, cases, &c., Department of Agriculture	5	3,948 40
Vaults, safes, and locks for public buildings	9	20,509 34
Heating apparatus for public buildings	59	68,843 20
Heating apparatus for United States Senate	3	4,250 00
Improvement and care of public grounds	3	12,845 33
Improving Botanic Garden and buildings	7	11,511 98
Improving and lighting Capitol grounds	13	94,834 23
Purchase of property corner of Pennsylvania avenue and First street west	3	82,004 15
Improvement of grounds, Agricultural Department	4	6,801 96
Washington Aqueduct	6	21,848 15
Repairs of water-pipes and fire-plugs	0	2,096 07
Repairs of Navy Yard and upper bridges	8	1,577 80
Adapting ponds in Monument lot to the culture of crops	3	7,199 96
Telegraph to connect Capitol with Departments and Government Printing Office	7	811 08
Lands and other property of the United States	9	1,532 78
Pedestal for statue of General George H. Thomas	6	21,113 34
Works of art for the Capitol	4	11,425 00
International Exhibition of 1876	4	3,383 30
Experimental garden, Agricultural Department	4	6,759 60
Laboratory, library, and museum, Agricultural Department	14	3,678 66
Postage, Agricultural Department	4	2,475 85
Collecting agricultural statistics	5	11,400 82
Purchase and distribution of valuable seeds	5	78,789 83

Accounts adjusted.	Number of accounts.	Amount.
DISBURSEMENTS—Continued:		
Investigating diseases of swine and other domestic animals.....	3	\$7,996 51
Investigating the history of insects injurious to agriculture and cotton plant.....	3	7,643 76
Expenses of Board of Health, District of Columbia.....	2	3,191 46
Inquiries into the causes of steam-boiler explosions.....	7	1,799 99
Map of the United States.....	2	4,000 00
Statistical Atlas of the United States.....	2	10,000 00
Depredations on public timber.....	5	18,595 28
Investigation of frauds, Pension Office.....	3	25,688 78
Removal of Bureau of Education.....	3	2,185 31
Protection and improvement of Hot Springs, Arkansas.....	4	3,281 75
Claims of workmen, act June 20, 1878.....	102	18,526 25
Columbia Institution for the Deaf and Dumb, current expenses.....	7	74,842 42
Columbia Institution for the Deaf and Dumb, buildings and grounds.....	6	31,879 01
Columbia Hospital for Women, current expenses.....	8	10,444 47
Government Hospital for the Insane, current expenses.....	4	169,780 46
Government Hospital for the Insane, buildings and grounds.....	4	28,023 82
Maryland Institution for the Instruction of the Blind.....	4	5,550 00
Support of Children's Hospital.....	3	3,946 79
Belton School, District of Columbia.....	5	29,287 58
National Association for the Relief of Colored Women and Children.....	5	11,829 97
Support of Freedmen's Hospital and Asylum.....	5	41,260 04
Miscellaneous.....	572	1,045,044 60
Disbursements on transfer warrants.....	259	464,987 78
Total.....	17,618	1,147,581,192 79

Number of accounts recorded	13,824
Number of letters recorded.....	3,219
Judiciary emolument accounts registered and referred	530
Number of powers of attorney for collection of interest on the public debt ex- amined, registered, and filed.....	5,891
Requisitions answered (incomplete)	470

Statement of transactions in bonded merchandise, as shown by warehouse and bond accounts
adjusted during the fiscal year ending June 30, 1879.

Number of accounts adjusted	908
Number of reports of "no transactions" received, examined, and referred.....	619
	1,527

Balance of duties on merchandise in warehouse per last report.....	\$15,126,598 20
Add balance at Richmond, Va., from 1877, omitted from last report..	1,874 60
Duties on merchandise warehoused	56,192,623 91
Duties on merchandise rewarehoused.....	2,024,720 35
Duties on merchandise constructively warehoused	18,343,729 33
Increased and additional duties.....	1,445,029 10
Total	93,134,575 49

Contra:

Duties on merchandise withdrawn for consumption	\$54,963,167 75
Duties on merchandise withdrawn for transportation	3,890,725 58
Duties on merchandise withdrawn for exportation	18,406,383 12
Allowances for deficiencies, damages, &c.....	1,954,170 20
Duties on withdrawal for construction and repair of vessels.....	64,923 77
Duties on bonds delivered to district attorneys for prosecution	143,340 79
Balance merchandise in warehouse.....	13,711,864 28
Total	93,134,575 49

Under the act of June 20, 1878, providing for the payment of certain
claims of workmen against contractors under the late board of public

works of the District of Columbia, eighteen hundred and fourteen (1,814) claims were filed, aggregating the sum of one hundred and forty-six thousand five hundred and ninety-four dollars and thirty-seven cents (\$146,594.37).

Claims amounting to eighteen thousand five hundred and twenty-six dollars and twenty-five cents (\$18,526.25) were allowed by this office and certified to the First Comptroller.

The remainder, aggregating one hundred and twenty-eight thousand and sixty-eight dollars and twelve cents (\$128,068.12) were rejected as not coming within the provisions of the act above cited. In the settlement of these claims four hundred and twenty-six (426) letters and circulars were mailed, and schedules of every claim allowed by this office were prepared and sent to the District Government for examination.

The accounts of the Commissioners of the District of Columbia, covering the expenditures made by them on account of said District for the months of July, August, and September, 1878, were examined and ready for statement, but were delayed, owing to a change in the manner of entering up advances to the Commissioners upon the books of the Register of the Treasury.

R. M. REYNOLDS,
First Auditor.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE SECOND AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,
SECOND AUDITOR'S OFFICE,
Washington, October 25, 1879.

SIR: I have the honor to submit the following report of the operations of this bureau during the fiscal year ending June 30, 1879:

RESUME.

Accounts and settlements.	On hand July 1, 1878.	Received during the year.	Adjusted during the year.	On hand, unadjusted, June 30, 1879.	Letters written.	Amount, in value.
Paymasters' accounts.....	46	591	463	154	1,547	\$19,905,903 15
Arrears of pay and bounty.....	15,752	22,795	12,277	26,170	84,826	264,456 01
Ordinance accounts.....						1,425,171 70
Medical accounts.....						263,926 77
Recruiting accounts.....						239,066 03
Freedmen's branch, Adjutant General's Office	201	1,946	1,660	461	5,844	49,737 81
National Home for Disabled Volunteer Soldiers.....						1,141,549 42
Miscellaneous accounts and claims.....						127,975 71
Payments to Soldiers' Home.....		14	14			108,569 23
Indian disbursing account.....	120	955	624	451		2,755,832 54
Indian claims.....		3,330	2,037	393	8,120	3,795,366 05
Indian property accounts.....	482	533	683	352		
War property accounts.....	8,191	3,880	4,295	7,776	2,034	
Miscellaneous settlements.....		453	453			101,792 85
						469,073 43

In addition to the number of letters written, as stated above, 34,259 were written in the various divisions of the office, making a total of 132,230.

The average number of clerks employed during the year was 134.

I subjoin for reference, and as containing interesting statistical information, consolidated tabular statements showing the work of the office since its organization sixty-two years ago.

STATEMENT No. 1.

Number of accounts settled from March 4, 1817, to June 30, 1861.

Accounts.	From March 4, 1817, to June 30, 1847.	From June 30, 1847, to June 30, 1861.	Total.
Ordinance, medical, and miscellaneous.....	13,232	6,695	19,927
Issuing and disbursing officers.....	12,880	6,097	18,977
Amount of pay, &c.....	6,283	21,361	27,644
Paymasters.....	1,759	1,427	3,186
Indian agents.....	3,254	5,592	8,846
Total.....	37,408	41,142	78,550

STATEMENT No. 2.

Accounts settled and amounts involved from June 30, 1861, to June 30, 1879.

For the year or years—	Paymasters' accounts.		Ordinance, medical, and miscellaneous.		Indian agents' disbursing accounts and Indian claims.	
	No.	Amount.	No.	Amount.	No.	Amount.
June 30, 1862.....	141	\$1,181,276 33	4,017	\$29,128,526 30	616	\$3,225,885 23
June 30, 1863.....	645	47,875,231 36	11,802	38,847,899 20	590	2,099,257 87
June 30, 1864.....	773	88,944,415 39	15,988	55,539,537 64	501	2,242,154 74
June 30, 1865.....	758	90,094,847 46	22,059	42,647,677 68	806	3,291,449 00
June 30, 1866.....	981	110,209,718 62	7,228	20,902,784 54	448	2,881,256 33
June 30, 1867.....	1,451	183,041,476 09	3,206	24,050,181 18	821	4,273,208 91
June 30, 1868.....	1,058	146,365,528 14	1,897	20,481,802 13	962	5,301,722 89
June 30, 1869.....	1,210	183,032,980 46	1,990	8,598,706 04	1,169	4,715,039 43
June 30, 1870.....	1,063	141,438,630 99	1,708	3,571,107 13	1,172	3,033,827 41
June 30, 1871.....	843	124,093,652 23	2,394	2,023,763 26	1,482	8,194,634 63
June 30, 1872.....	2,350	131,057,413 62	1,865	1,566,024 96	1,649	6,351,816 32
June 30, 1873.....	1,093	27,116,621 39	2,567	1,668,183 01	1,871	8,329,188 21
June 30, 1874.....	1,068	17,257,093 25	2,768	6,125,429 70	1,648	4,074,866 43
June 30, 1875.....	506	14,837,714 29	2,264	3,164,334 07	2,107	6,033,207 25
June 30, 1876.....	565	15,563,739 75	2,177	2,346,339 07	2,242	7,081,663 57
June 30, 1877.....	514	12,604,998 41	2,207	2,193,993 02	2,974	8,568,480 73
June 30, 1878.....	560	12,773,194 23	1,828	2,299,151 01	3,550	5,101,308 06
June 30, 1879.....	483	10,596,903 15	1,666	3,257,711 74	3,531	6,551,198 69
Total.....	15,993	1,301,415,493 61	89,511	273,797,691 68	28,229	91,240,105 60

Accounts settled and amounts involved from June 30, 1861, to June 30, 1879—Continued.

For the year ending—	Bounty, arrears of pay, &c.		Regular and volunteer recruiting accounts.		Freedmen's Bureau accounts.	Total.	
	No.	Amount.	No.	Amount.	Amount.	No.	Amount.
June 30, 1863...	3,328	\$249,180 64	1,504	\$217,088 97	.....	9,606	\$37,111,957 47
June 30, 1863...	19,191	2,443,293 89	1,358	898,785 94	.....	23,584	91,664,467 76
June 30, 1864...	60,756	10,070,528 91	1,880	2,220,744 15	.....	90,896	156,917,380 83
June 30, 1865...	84,517	14,047,809 35	2,594	8,019,831 50	.....	110,774	156,040,305 05
June 30, 1866...	78,335	16,160,247 17	4,317	21,353,127 88	.....	91,309	177,536,134 34
June 30, 1867...	59,121	10,638,782 38	3,765	19,891,437 59	.....	68,364	240,895,086 55
June 30, 1868...	203,980	19,598,445 88	2,416	5,202,140 83	.....	210,208	196,932,639 67
June 30, 1869...	85,279	8,355,018 22	1,478	2,841,079 24	.....	91,132	207,563,432 39
June 30, 1870...	53,826	4,180,770 31	946	2,443,906 48	.....	58,785	154,648,208 32
June 30, 1871...	40,078	2,344,164 42	.....	957,010 35	.....	44,797	137,587,164 89
June 30, 1872...	22,170	1,278,100 20	.....	657,268 02	.....	27,074	139,911,580 61
June 30, 1873...	32,420	1,694,985 64	.....	405,060 44	\$8,541,725 08	37,691	48,025,763 77
June 30, 1874...	27,315	1,230,627 04	.....	220,489 75	778,003 28	82,070	30,586,710 35
June 30, 1875...	19,476	981,407 74	.....	223,962 79	853,668 18	24,353	28,094,594 27
June 30, 1876...	11,433	485,084 65	.....	224,877 99	210,874 07	16,417	25,912,519 00
June 30, 1877...	13,799	577,340 79	.....	132,609 16	296,100 15	19,468	24,313,612 26
June 30, 1878...	15,774	442,601 59	.....	418,773 81	266,727 98	21,712	21,588,615 51
June 30, 1879...	18,377	394,456 01	.....	239,066 63	49,737 81	24,067	21,489,073 43
Total.....	969,175	\$9,058,501 72	10,122	\$6,126,848 38	10,996,836 00	1,026,103	\$1,999,834,336 47

STATEMENT No. 3.

Property accounts adjusted and miscellaneous work performed in connection with the settlement of accounts.

For the year ending—	Number of property accounts adjusted.	Number of bounty claims rejected.	Number of letters written.	Number of letters, &c., received, briefed, and registered.	Number of requisitions registered and posted.	
June 30, 1862.....	5,021	882	14,584	37,478	5,689	.....
June 30, 1863.....	7,368	1,470	40,651	134,816	5,144	.....
June 30, 1864.....	29,745	2,874	108,373	254,690	5,410	.....
June 30, 1865.....	163,429	2,210	126,569	170,340	5,905	38,904
June 30, 1866.....	176,203	19,090	370,020	245,908	2,696	74,041
June 30, 1867.....	141,698	27,236	478,477	436,305	2,401	134,328
June 30, 1868.....	129,463	41,217	603,698	220,209	1,868	320,408
June 30, 1869.....	91,322	26,526	405,745	171,931	2,709	125,315
June 30, 1870.....	43,089	22,865	303,556	173,487	2,842	16,435
June 30, 1871.....	39,171	22,965	233,129	227,754	2,519	18,138
June 30, 1872.....	237,675	13,873	202,658	133,957	2,606	29,309
June 30, 1873.....	41,775	19,346	265,544	194,574	2,679	42,309
June 30, 1874.....	31,134	17,618	237,485	186,524	3,261	35,647
June 30, 1875.....	4,932	11,981	131,321	118,602	3,440	53,849
June 30, 1876.....	4,746	7,856	101,140	84,464	3,286	23,874
June 30, 1877.....	5,613	9,569	106,040	116,563	3,957	9,046
June 30, 1878.....	4,712	16,018	105,496	121,066	4,481	10,068
June 30, 1879.....	4,295	27,327	132,230	119,996	5,162	11,538
Total.....	1,162,055	290,263	4,026,722	3,218,714	60,147	942,229

It will be observed that during the last fiscal year the current work of the office has fallen in arrear, there being 4,985 more accounts and claims on hand awaiting adjustment on June 30, 1879, than on June 30, 1878. At the same time the work performed in 1879 is greatly in excess of any year since 1875, when the number of employes was reduced to 175. The increased arrearage is attributable partly to the continued increase of work and partly to the fact that the clerical force is inadequate to the

prompt transaction of public business. In the annual report for 1876 it was stated that "in consequence of the large reduction recently made in the clerical force of the office it will be hardly possible to do more at present than to dispose of the current work. If, indeed, further arrears do not accumulate, greater delays in settlements must occur to disappoint the expectations of claimants and disbursing officers, notwithstanding the best efforts of the gentlemen employed."

Since 1876 the force has been still further reduced to 145, but the business of the office has steadily increased, as will be seen by the subjoined figures :

Fiscal year.	Number of accounts and claims received.	Number of accounts and claims adjusted.
1876.....	18,826	22,168
1877.....	20,876	25,923
1878.....	26,415	27,245
1879.....	34,517	29,533

The correspondence of the office and the number of requisitions on the Treasury issued by the War and Interior Departments have also increased as follows :

	1876.	1877.	1878.	1879.
Letters written	101,140	106,046	105,496	132,230
Requisitions registered	3,386	3,957	4,481	5,162

Under the act of February 19, 1879, entitled "An act for the payment to the officers and soldiers of the Mexican war of the three months' extra pay provided for by the act of July 19, 1848," a large number of claims have been presented for settlement. After due consideration and consultation, the accounting officers decided that, so far as Army claimants are concerned, the act of 1879 merely revives the act of 1848, which limited the allowance of three months' extra pay to those who were in actual service and served out the term of their enlistment or were honorably discharged during the war, and to certain relatives of deceased soldiers. In accordance with this decision, and pending additional legislation, action has been deferred on the applications of those officers and soldiers who continued in the military service after the close of the war, and who were not entitled to extra pay under the provisions of the act of 1848.

As might be expected, numerous claims have been presented, no doubt in good faith, by parties who were paid in full, either by paymasters on muster-out, by the Pay Department prior to July 25, 1850, or through this office subsequent to that date. Up to the 30th ultimo the total number of claims filed under the act of February 19 was 3,208, of which 2,721 have been disallowed and only 19 paid, leaving 468 on hand for future settlement. In addition to these formal claims, 5,633 letters, inquiring whether the writers were entitled to extra pay, have been received and answered in the negative. In these old cases, where nearly a third of a century has elapsed since the services were rendered, letters of inquiry involve the same labor and research as the preliminary examination of regular claims, and materially add to the work of the office, but in such a way that the increase cannot very well be shown in any report of work performed.

The gentlemen employed in this office are deserving of special commendation for the manner in which they have performed the constantly-increasing work allotted to them. In ability, industry, faithfulness, and the competent discharge of their duties, it is believed that they will compare very favorably with the clerical force of any bureau of the department.

Very respectfully,

C. F. HERRING,
Acting Auditor.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE THIRD AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,
THIRD AUDITOR'S OFFICE,
Washington, October 25, 1879.

SIR: I have the honor to transmit herewith report of the operations of this office for the fiscal year ended June 30, 1879. The following statement shows, in tabular form, the number and amount of accounts and claims received and audited, and the number and amount of accounts and claims remaining unsettled at that date, viz:

Description of accounts.	Number of accounts remaining on hand June 30, 1879.	Number of accounts received in fiscal year ended June 30, 1879.	Number of accounts settled in the fiscal year ended June 30, 1879.		Number of accounts unsettled June 30, 1879.	
	Monthly and quarterly.	Monthly and quarterly.	Accounts.	Amount involved.	Accounts.	Amount involved.
Quartermasters' money	605	2,734	2,801	\$11,116,421 01	558	\$1,800,068 67
Quartermasters' property	379	2,806	2,965	.....	220	.....
Commissarys' money	650	1,064	1,998	2,071,356 37	625	823,183 14
Pension agents' money	114	256	281	25,785,870 68	80	12,375,163 43
Engineers' money	24	222	213	2,737,651 00	33	3,343,074 34
Signal officers' money	57	100	107	414,483 47	50	143,772 13
Signal officers' property	41	801	663	.....	179	.....
Claims for horses lost	5,465	202	471	81,435 84	5,196	941,316 51
Claims for steamboats destroyed	72	9	1	1,020 00	73	727,378 87
Oregon war claims	663	287	240	35,358 09	710	5,499 69
Miscellaneous claims	12,572	4,246	4,144	4,340,937 91	12,674	8,427,640 54
State war claims	0	3	3	269,624 70	0	4,347,468 07
Total	20,659	13,643	13,886	48,834,588 07	20,416	31,734,105 59

BOOKKEEPER'S DIVISION.—(J. F. Jones, chief.)

The duty devolving upon this division is to keep the appropriation and money accounts of disbursing-officers, which are settled in this office.

The annexed statement shows the amount drawn out of certain of its appropriation accounts, and also the repayments made through this office into the Treasury, and is a full exhibit of its financial operations during the fiscal year.

Financial operations of the Third Auditor's Office during the fiscal year ended June 30, 1879.

	Advances to officers and agents during the fiscal year.	Claims paid during the fiscal year.	Transfers not involving an expenditure from the Treasury.	Special relief acts.	Total.
Amount drawn by War and Insurance of the at sundry amounting to in the man- and out of operations, viz.					
D.	\$3,413,161 41	\$42,618 49	\$4,420 22		\$3,460,136 12
M. D.	1,641,111 87	44,962 30	227 61		1,686,291 78
M. D.	848,887 72	\$9,944 62	2 770 14		848,192 48
	4,903,161 00	652,525 41	10,588 97		4,741,133 52
for bonds of hospitals	74,999 59	1,300 755 79			1,000,755 79
	204,164 63	8 5 36			75,884 95
other works		10,602 01			214,546 64
for River		1,750,000 00			1,750,000 00
	128,408 45	10,193 66			138,602 11
of national	58,369 32	51 00			58,420 32
son equipment	1,039,607 91	41,947 69	188 17		1,101,843 77
storms	350,081 68				350,081 68
and their		923 17			923 17
men at Port	58,847 83				58,847 83
and cap- Washington vol-		10,485 07			10,485 07
cemetery at	1,500 00				1,500 00
ack Hills	100,000 00				100,000 00
ses incurred		123,689 36			123,689 36
ation	100,000 00				100,000 00
there bound	10,575 81				10,575 81
ademy	65,728 00				65,728 00
ice and re	40,000 00				40,000 00
aph lines		279,908 18			279,908 18
stores and		722,980 91	139 37		723,119 28
July 4 1864		94,037 05	185 16		94,222 21
for supplies					
bellion	50,000 00				50,000 00
ited by Third					
y 14, 1878					
om Bismarck					
keeping and				\$22,949 49	22,949 49
teaprisons,	7,000 00				7,000 00
burg, Miss	25,000 00				25,000 00
Fortress Mon	99 51				99 51
remeteries	100 00				100 00
shells to us	6,747,760 00	27,850 69	604 01		6,747,760 00
	2,113,675 00	108,654 07	6,207 99		2,142,127 10
ch 3, 1879.					115,052 06
to prisoners		1 282 00	7 88		1 289 88

Statement showing the financial operations of the Third Auditor's Office, &c.—Continued.

	Advances to officers and agents during the fiscal year.	Claims paid during the fiscal year.	Transfers not involving an expenditure from the Treasury.	Special relief acts.	Total.
Relief of Jacob Christian				\$67 50	\$67 50
Relief of persons suffering from ravages of grasshoppers			\$663 99		663 99
Relief of George R. Dennis				2,394 66	2,394 66
Relief of Mrs. Emma A. Porch				700 00	700 00
Relief of Emille R. Hooe				1,455 33	1,455 33
Capture of Jefferson Davis		\$293 00			293 00
Headstones for graves of soldiers in private cemeteries, act Feb. 3, 1879	\$10,000 00				10,000 00
	58,662,421 56	5,559,587 77	35,773 43	169,293 21	64,427,085 97

The number of credit and counter requisitions drawn by the Secretaries of War and Interior on sundry persons in favor of the Treasurer of the United States is 1,116, on which repayments into the Treasury have been made through the Third Auditor's Office during the fiscal year ended June 30, 1879, as follows:

Deposits	\$1,089,587 70
Transfer accounts	185,263 69
Total	1,274,851 39

THE QUARTERMASTER'S DIVISION.—(I. S. Tichenor, chief.)

The accounts of quartermasters cover a wide range of money and property responsibility. The former embraces disbursements for barracks and quarters, hospitals, storehouses, offices, stables, and transportation of Army supplies, the purchase of Army clothing, camp and garrison equipage, cavalry and artillery horses, fuel, forage, straw, material for bedding, and stationery; payments of hired men and of "per diem" to extra-duty men; expenses incurred in the pursuit and apprehension of deserters, for the burial of officers and soldiers, for hired escorts, expresses, interpreters, spies, and guides, for veterinary surgeons and medicines for horses, for supplying posts with water, and for all other proper and authorized outlays connected with the movements and operations of the Army not expressly assigned to any other department. Property purchased with the funds of the Quartermaster's Department is accounted for upon "returns" transmitted through the Quartermaster-General to this office (with the exception of "returns of clothing, camp and garrison equipage," which come under the supervision of the Second Auditor), showing that the disposition made of it is in accordance with law and Army regulations.

Statement showing the operations of the Quartermaster's Division for the fiscal year ended June 30, 1879.

	Money accounts.		Property returns.	Supplemental settlements.		
	Number.	Amount involved.		Property.	Money.	Amount involved.
On hand per last report	605	\$1,721,562 85	379			
Received during the fiscal year	2,754	11,194,926 83	2,806	18	207	\$156,063 70
Total	3,359	12,916,489 68	3,185	18	207	156,063 70
Reported during the fiscal year	2,801	11,116,421 01	2,965	18	207	156,063 70
Remaining unsettled	558	1,800,068 67	220			
Total	3,359	12,916,489 68	3,185	18	207	156,063 70

Statement showing the operations of the Quartermaster's Division, &c.—Continued.

	Signal accounts.			Total.	
	Property.	Money.	Amount involved.	Number.	Amount involved.
On hand per last report	41	57	\$187,737 96	1,082	\$1,909,800 81
Received during the fiscal year	801	100	370,517 64	6,686	11,721,528 17
Total	842	157	558,255 60	7,768	13,630,828 98
Reported during the fiscal year	663	107	414,483 47	6,701	11,686,988 18
Remaining unsettled	179	50	143,772 13	1,007	1,943,840 80
Total	842	157	558,255 60	7,708	13,630,828 98

Number of letters written by Quartermaster's Division, 6,153; average number of clerks employed, 17 $\frac{5}{8}$; number of vouchers examined, 199,375; number of pages of manuscript written, 5,351.

SUBSISTENCE DIVISION.—(Andrew Cauldwell, chief.)

The Subsistence Division examines the accounts of all commissaries and acting commissaries in the Army whose duties are to purchase the provisions and stores necessary for its subsistence, and to see to their proper distribution.

These commissaries render monthly money accounts, with proper vouchers for disbursements of the funds intrusted to them, together with a provision-return, showing the disposition of provisions and stores purchased or derived from other sources. These accounts are received through the Commissary General of Subsistence, and are examined and audited in this division.

The money accounts and vouchers, together with a certified statement of the result of said examinations, are then referred to the Second Comptroller of the Treasury for revision. Upon their return from the Comptroller, with the settlement approved, the officers are notified of the result and called upon to adjust or explain any omissions or errors that may have been discovered. The money and provision accounts, together with the vouchers and papers belonging thereto, are then placed in the settled files for future reference, and remain permanently in the custody of this office.

The engineer branch is engaged in the examination of the accounts of officers and agents of the Engineer Department, who, under direction of the Chief of Engineers of the Army (except the Superintendent of the Military Academy at West Point, whose disbursements are directed by the Inspector-General), disburse moneys out of the various appropriations, now 248 in number, made from time to time by Congress for works of a public nature, which may be classed under the following heads, viz: The purchase of sites and materials for and construction and repairs of the various fortifications throughout the United States; construction and repairs of roads, bridges, bridge-trains, &c., for armies in the field; surveys on the Atlantic and Pacific coasts; examination and surveys of the northern and western lakes and rivers; construction and repairs of breakwaters; repairs and improvement of harbors, both on sea and lake coasts; improvement of rivers and purchase of snag and dredge boats for the same; and the expense of the Military Academy at West Point.

The transactions of the subsistence and engineer branches for the fiscal year are shown by the following statement, viz:

	Subsistence accounts.			Engineer accounts.	
	Number.	Amount involved.	Provision returns.	Number.	Amount involved.
On hand per last report, June 30, 1878.....	659	\$844,644 29	555	23	\$1,154,028 70
Received during fiscal year.....	1,964	2,049,895 22	1,004	229	4,925,896 64
Total.....	2,623	3,794,539 51	2,519	245	6,079,925 34
Audited during fiscal year.....	1,998	2,971,336 37	1,008	212	3,737,651 00
Remaining on hand June 30, 1879.....	625	823,183 14	521	33	2,342,074 34

Number of vouchers examined, 113,348; number of letters written, 1,649; number of difference sheets written, 784; number of "calls" answered, 636; number of clerks employed, 9.

CLAIMS DIVISION.—(W. S. Stetson, chief.)

This division has the settlement of claims of a miscellaneous character arising in the various branches of service in the War Department and growing out of the purchase or appropriation of supplies and stores for the Army; the purchase, hire, or appropriation of water-craft, railroad stock, horses, wagons, and other means of transportation; the transportation contracts of the Army; the occupation of real estate for camps, barracks, hospitals, fortifications, &c.; the hire of employes, mileage, courts-martial fees, traveling expenses, commutations, &c.; claims for compensation for vessels, railroad cars, engines, &c., lost in the military service; claims growing out of the Oregon and Washington war of 1855 and 1856, and other Indian wars; claims of various descriptions under special acts of Congress, and claims not otherwise assigned for adjudication.

Miscellaneous claims for fiscal year 1878-1879.

	Number	Amount claimed.	Amount allowed.
On hand July 1, 1878.....	12,572	a \$8,069,707 83	.....
Received during the year.....	4,246	b 4,709,090 63	.....
Total.....	16,818	12,768,798 45	.....
Disposed of during the year.....	4,144	c 4,340,067 01	\$3,640,023 26
On hand July 1, 1879.....	12,674	d 8,427,840 54	.....

a This is the amount claimed in 11,072 cases, the amount claimed in the other 1,500 cases not being stated.

b This is the amount claimed in 4,090 cases, the amount claimed in the other 156 cases not being stated.

c This is the amount claimed in 4,011 cases, the amount claimed in the other 133 cases not being stated.

d This is the amount claimed in 11,142 cases, the amount claimed in the other 1,532 cases not being stated.

Number of letters written during the year, 2,709.

	Oregon and Washington Indian war claims, 1855-56.			Lost vessels, act March 3, 1849.		
	Number.	Amount claimed.	Amount allowed.	Number.	Amount claimed.	Amount allowed.
On hand July 1, 1878.....	603	\$18,254 44		72	\$702,378 87	
Received during the year.....	287	622,603 34		2	26,020 00	
Total.....	890	40,857 78		74	728,398 87	
Disposed of during the year.....	240	\$55,358 09	\$24,719 08	1	1,020 00	\$1,000 00
On hand July 1, 1879.....	710	\$5,499 69		73	727,378 87	

^a This is the amount claimed in 342 cases, the amount claimed in the other 321 cases not being stated.

^b This is the amount claimed in 98 cases, the amount claimed in the other 189 cases not being stated.

^c This is the amount claimed in 95 cases, the amount claimed in the other 145 cases not being stated.

^d This is the amount claimed in 345 cases, the amount claimed in the other 365 cases not being stated.

Number of letters written during the year, 174.

STATE AND HORSE CLAIMS DIVISION.—(T. E. G. Pettengill, chief.)

The duties of this division embrace the settlement, under the various acts and resolutions of Congress relating thereto, of all claims of the several States and Territories for the "cost, charges, and expenses properly incurred by them for enrolling, subsisting, clothing, supplying, arming, equipping, paying, and transporting their troops employed in aiding to suppress the recent insurrection against the United States," and all claims arising out of Indian and other border invasions.

Also the settlement of claims for compensation for loss of horses and equipage sustained by officers or enlisted men while in the military service of the United States, and for the loss of horses, mules, oxen, wagons, sleighs, harnesses, while in said service, by impressment or contract.

State claims.	Original accounts.		Suspended accounts.	
	Number.	Amount.	Number.	Amount.
On hand June 30, 1878.....	9	\$3,556,878 56	24	\$4,409,910 15
Received during the fiscal year ended June 30, 1879.....	3	1,060,824 21		
Total.....	12	4,617,702 77	24	4,409,910 15
Reported during the fiscal year ended June 30, 1879.....	3	369,824 70	3	24,758 74
On hand June 30, 1879.....	9	4,247,868 07	21	4,385,151 41

Horse claims.	Original accounts.			
	Number.	Amount.	Number.	Amount.
On hand June 30, 1878.....			5,405	\$871,461 82
Received during the fiscal year ended June 30, 1879.....			158	45,271 78
Received during the fiscal year ended June 30, 1879.....			44	6,018 75
Total.....			5,607	1,022,752 35
Allowed during the fiscal year ended June 30, 1879.....	369	\$54,038 84		
Amount disallowed on same.....		5,931 85		
Total amount claimed.....		60,570 69		
Reported during the fiscal year ended June 30, 1879.....	102	20,865 15		
Amount finally disposed of during the fiscal year.....			471	81,435 84
On hand June 30, 1879.....			5,196	941,316 51

Number of briefs made, 1,095; number of claims examined and suspended, 2,127; number of letters received, 4,129; number of letters written, 5,949; number of clerks, 5.

COLLECTION DIVISION.—(J. M. Vale, chief.)

Statement of business transacted by the collection division during the year ended June 30, 1879.

Date.	Entered on registers.	Special cases.		Bounty land and pension cases examined.	Letters written.	Number of soldiers of the war of 1812 abstracted.	Days comparing.	Cases prepared for suit.
		Number of special cases.	Accounts referred to.					
July, 1878.....	548	350	3,701	559	332	18,578	89	.....
August, 1878.....	1,133	203	2,074	890	256	20,399	48	1
September, 1878.....	1,003	198	2,158	723	160	18,381	118	.....
October, 1878.....	1,908	214	2,354	810	173	19,661	114	.....
November, 1878.....	1,859	211	2,496	589	170	12,278	45	.....
December, 1878.....	1,105	150	2,462	681	148	10,361	16	3
January, 1879.....	2,350	300	4,126	1,047	233	11,483	20	1
February, 1879.....	.....	146	2,654	070	101	4,791	18	.....
March, 1879.....	5,207	343	3,708	1,394	317	7,090	26	1
April, 1879.....	2,224	294	3,864	1,203	273	8,716	30	.....
May, 1879.....	1,892	281	3,803	937	282	4,784	15	.....
June, 1879.....	1,023	254	3,381	780	204	2,882	.....	2
Total.....	22,121	2,963	37,181	10,618	2,759	139,313	541	8

During the past fiscal year nothing has been done in checking property purchased and paid for on abstracts A, A A, and B upon the accountability abstracts of the purchasing officers, because of the insufficiency of force in the collection division. The importance of this work, in order to protect the government from fraudulent and erroneous claims, has been set forth in preceding annual reports. Work has been continued during the fiscal year in abstracting the names of soldiers of the war of 1812, for the purpose of arrangement in alphabetical registers, with all the clerical force available. Two hundred and seventy-one thousand two hundred and thirty-four payments have been abstracted, which is probably one-fourth of the payments made for services in that war. In order to complete these registers within a period of time that will be available to the old soldiers and their widows whose applications for pension are now pending in the office of the Commissioner of Pensions, but whose service cannot be traced for lack of data to base a search upon, an increase in the clerical force in this division will be necessary. In many cases, of widows especially who know the fact by tradition that their former husbands served in the war of 1812, the claimants do not know or have forgotten the names of the officers under whom they served. Until these alphabetical registers are completed, this office is unable to trace the service of any soldier without the name of the captain or colonel under whom the soldier served; when these registers shall be completed, a knowledge of the name of the soldier will be a sufficient clue to trace his military service. The current work of the collection division has largely increased during the fiscal year, and, if the same ratio of increase continues, additional clerical force will be required to keep it up.

* ARMY PENSION DIVISION.—(W. H. Whitney, chief.)

The duties of this division embrace the settlement of all accounts which pertain to the payment of Army pensions throughout the United States. An account is kept with each pension agent, charging him with all moneys advanced for payment to pensioners, under the proper bond

and fiscal year. At the end of each month the agent forwards his vouchers, abstract of payments, and money statement direct to this office, where a preliminary examination is made to see if the money advanced is properly accounted for. The receipt of the account is then acknowledged, and the account filed for audit. Each voucher is subsequently examined, and the payment entered on the roll-book opposite the pensioner's name. The agent's account, when audited, is reported to the Second Comptroller for his revision, and a copy of the statement of errors, if any, sent to the agent for his information and explanation. The account, when revised, is returned by the Second Comptroller to this office and placed in the settled files, where it permanently remains. The following tables show the operations of this division during the fiscal year:

Amounts refunded to the credit of the following appropriations during the fiscal year ended June 30, 1879.

Invalids, 1871	\$334 96
Widows and others, 1871	8,091 72
Invalids, 1872	209 80
War of 1812, 1872	53 33
Widows and others, 1872	776 46
Army pensions, 1873.....	516 92
Army pensions, 1874.....	760 47
Army pensions, 1875.....	1,019 93
Army pensions, 1876.....	20,096 48

	Army pen- sions.	Compensa- tion.	Fees on vouchers.	Fees to surgeons.	Total.
Balance on hand June 30, 1878, ap- propriation 1877	\$753,812 05	\$1,386 68	\$38,161 50	\$36,159 11	\$828,509 34
Amount refunded and deposited, ap- propriation 1877	6,108 56	26 49	.....	4 00	6,139 05
Total.....	759,910 61	1,413 17	38,161 50	36,163 11	835,648 39
Amount paid on settlement of ac- counts, appropriation 1877.....	2,665 83	275 49	12 68	13 40	2,967 40
Balance to credit of appropriation, June 30, 1879	757,244 78	1,137 68	38,148 82	36,149 71	832,680 90

NOTE.—The above amounts were all carried to the surplus fund.

	Army pen- sions.	Compensa- tion.	Fees on vouchers.	Fees to surgeons.	Total.
Balance on hand June 30, 1878, ap- propriation 1878.....	\$887,922 08	\$129,251 31	\$19,463 25	\$7,381 23	\$1,044,017 87
Amount refunded and deposited, ap- propriation 1878	298,760 02	1,100 18	1,172 25	1,011 36	302,043 81
Total.....	1,186,682 10	130,351 49	20,635 50	8,392 59	1,346,061 68
Amount paid on settlement of ac- counts, appropriation 1878.....	3,407 62	6 00	.....	5,066 00	6,479 62
Balance to credit of appropriation June 30, 1879	1,183,274 48	130,345 49	20,635 50	5,326 59	1,339,582 06

Amount appropriated to pay Army pensions for the fiscal year ended June 30, 1879.

Invalids	\$13,150,000 00
Widows, minors, and dependent relatives	12,830,000 00
Survivors war 1812, act 14th February, 1871	800,000 00
Widows war 1812, act 14th February, 1871.....	280,000 00
Survivors war 1812, act 9th March, 1878	532,000 00
Widows war 1812, act 9th March, 1878.....	967,974 00
Fees to examining surgeons.....	50,000 00
Pay and allowances.....	213,500 00
	<hr/> 28,823,474 00

Amount drawn against the \$1,800,000 appropriated for Army and Navy, act January 27, 1879	\$1,052,637 60
Amount drawn against the \$1,800,000 after June 30, to make amount of agents' payment	89,833 02
Amount to be accounted for (as follows).....	29,964,944 68

Amount paid invalids.....	\$14,771,393 57
Amount paid widows.....	11,128,566 50
Amount paid survivors war 1812, act 14th Feb'y, 1871.....	654,070 31
Amount paid widows war 1812, act 14th Feb'y, 1871.....	208,901 96
Amount paid survivors war 1812, act 9th March, 1878.....	343,272 01
Amount paid widows war 1812, act 9th March, 1878.....	1,923,608 24
Amount paid fees to examining surgeons	85,543 50
Amount paid pay and allowances	201,967 24
Amount of unexpended balances in agents' hands to be deposited	587,621 35
	29,964,944 68

Arrears of pensions, acts January 25 and March 3, 1879, paid as follows:

Amount paid invalids.....	2,842,658 23
Amount paid widows and others	1,176,869 10
Amount paid fees on vouchers	1,884 00

Total paid to June 30, 1879 4,021,411 33

The following tabular statement shows the number of accounts received and audited during the fiscal year:

	Number.	Amount involved.
Accounts on hand June 30, 1878.....	114	\$11,817,962 37
Accounts received during the year	256	26,173,111 64
Total	370	38,040,974 01
Accounts reported to the Second Comptroller.....	281	25,765,870 68
Accounts on hand unsettled	89	12,275,103 43
Total	370	38,040,974 01

NOTE.—The 89 unsettled accounts belong to the fiscal year 1879.

Pensioners recorded	27,668
Pensioners transferred	931
Pensioners increased	6,770
Pensioners restored.....	752
Certificates reissued.....	924
Changes noted	1,187
Corrections made	2,247
Pension vouchers examined	968,191
Payments entered	928,182
Pages of abstract added.....	30,838
Pages of miscellaneous copied	1,558
Payments corrected	436
Copies of surgeons' certificates sent to Commissioner	227
Vouchers withdrawn from files	5,134
Letters received and registered	3,315
Letters written	3,897
Letters copied and indexed	3,287
Pension checks verified before payment, 190, amounting to.....	\$6,323 82
Pension checks reported for cover to outstanding liabilities, 225, amounting to.....	\$4,803 42
Settlements for "lost checks" made, 51, amounting to	\$2,892 00

The following tabular statement exhibits the number and amount of accounts on hand and unsettled July 1, 1869, together with those received and audited each fiscal year since:

24

32

Congress, under act March 1, 1879, authorized the amount withheld from pensioners under act March 3, 1865, by reason of being in the civil employ of the government, to be refunded, and in nearly every case the amount due had to be verified by this office before payment could be made by the agents for paying pensions. The acts granting "arrears of pension" added a vast amount of labor to this division, and the force employed thereon was not increased in proportion to the amount of extra duty required, as was done in the office of the Commissioner of Pensions. These, combined, have caused an accumulation of work, and with the present force it cannot be kept up, although the clerks on this division are doing the best in their power to facilitate official business. The force employed during the year numbered thirty-eight clerks and two copyists. The following tabular statements exhibit the amount disbursed by the several agents, and the unexpended balances in their hands during and at the close of the fiscal year.

* * * * *

THE FILES.

There are now 178,742 money settlements, comprising accounts of quartermasters, commissaries of subsistence, engineer officers, agents for paying pensions, and miscellaneous claims. The property and provision returns of Army officers aggregate about 50,000 more. Of these settlements, 6,117 (and 3,365 property returns) have been added during the fiscal year. The papers are in fair condition, but much inconvenience is felt for want of additional rooms and appurtenances. The current pension vouchers now have to be placed upon the floor, as no shelving can be spared for them. It is hoped that after the Bureau of Engraving and Printing shall be removed to its new building, proper accommodations may be furnished for these valuable papers, where their frequent examination will involve as little wear and tear as possible. Some of these papers have been mutilated by handling, and should be bound to prevent further disintegration.

There were nine lady copyists usefully employed during the year. The number of miscellaneous papers registered was 4,700; difference sheets registered, 606; total, 5,306. Miscellaneous papers copied and compared, 13,447 pages; difference sheets compared, 2,349; letters recorded and compared, 3,289; papers copied in pension division, 5,022; total, 24,107. Number of names indexed, 21,843.

I respectfully renew the suggestion often made by my predecessors as to the necessity of some limitation to the time within which claims

against the United States may be presented to the Executive Departments. In the absence of such a check the danger of frauds upon the government increases with every passing year. Most of the stale claims pressed upon this office grew out of the operations of the Army during the late rebellion, or in other wars of many years ago. To thoroughly sift these claims as public interest demands it is becoming daily more difficult. On the other hand, as the danger of detection grows less through the lapse of time, the temptation to present and the facilities for establishing fraudulent claims increase.

Statutes of limitation are no longer looked upon with disfavor by courts or legislative bodies, and provisions of this kind respecting suits between individuals are, I believe, nearly universal. That which is everywhere conceded to be wise and just as between citizens of a State can but be considered fair and just as between the citizen and the State.

Few claims that are fair and honest fail of presentation within six years from their origin, and the claimant who waits longer, if laboring under no legal disability, should be barred, in my opinion. One thing is certain—no one can be familiar with the business of this office for any period, however brief, without being thoroughly convinced that such a limitation would be of great value as a protection to the Public Treasury, would remove a great temptation from the viciously inclined, and would give much needed relief to the Executive Departments.

Respectfully submitted.

E. W. KEIGHTLEY,
Auditor.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE FOURTH AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,
FOURTH AUDITOR'S OFFICE,
Washington, November 1, 1879.

SIR: I have the honor to submit the following tables indicating the work of this office for the fiscal year ending June 30, 1879:

PAYMASTERS' AND MARINE ACCOUNTS.

(GEORGE L. CLARK, *Chief.*)

Statement of the work performed by the paymasters' division for the fiscal year ending June 30, 1879.

Date.	Accounts received.	Accounts settled.	Letters received.	Letters written.	Cash vouchers.	Cash disbursements.
1878.						
July	28	35	128	110	1,200	\$1,184,149 36
August	41	23	104	100	525	472,164 08
September	23	34	115	120	682	888,430 72
October	28	32	137	125	910	952,616 59
November	38	20	104	113	870	952,280 03
December	15	27	70	68	694	764,594 08
1879.						
January	30	25	137	109	1,044	885,216 35
February	38	20	112	105	407	464,805 06
March	22	21	122	120	750	1,582,731 59
April	23	26	119	96	528	630,954 39
May	34	23	100	109	688	778,195 06
June	24	24	77	83	1,303	1,404,780 87
Total	343	316	1,331	1,256	9,661	10,800,927 80

Accounts on hand July 1, 1878 43
Accounts on hand June 30, 1879..... 70

PURCHASING PAYMASTERS' AND ALLOTMENT ACCOUNTS.

(WILLIAM F. STIDHAM, Chief.)

Statement of the work performed by the Navy pay and allotment division for the fiscal year ending June 30, 1879.

Date.	Accounts received.	Accounts settled.	Letters received.	Letters written.	Amount involved.
1878.					
July.....	36	37	210	204	\$1,126,847 44
August.....	16	11	166	147	22,554 07
September.....	5	5	224	206	149,196 03
October.....	9	8	197	205	285,541 33
November.....	6	8	237	234	941,252 52
December.....	10	9	213	210	784,505 73
1879.					
January.....	6	6	202	216	241,255 51
February.....	10	11	194	189	943,142 73
March.....	21	25	210	202	413,875 94
April.....	25	20	211	183	182,831 74
May.....	11	9	237	208	621,424 00
June.....	6	10	178	161	824,640 15
Total.....	161	168	2,479	2,365	6,537,067 19

Allotment accounts.

Date.	Allotments registered.	Allotments discontinued.
1878.		
July.....	52	156
August.....	34	76
September.....	39	89
October.....	137	136
November.....	236	108
December.....	250	84
1879.		
January.....	95	123
February.....	89	116
March.....	168	107
April.....	84	91
May.....	80	113
June.....	70	77
Total.....	1,334	1,276

Amounts paid at Navy pay offices for allotments during the year 1878.

New York.....	\$129,500 00
Boston.....	77,751 50
Philadelphia.....	74,398 00
Washington.....	73,018 00
New York.....	21,292 00
Baltimore.....	18,300 00
San Francisco.....	10,757 00

Total..... 405,016 50

Accounts remaining on hand June 30, 1879, 507; number of vouchers examined 3,979.

BOOKKEEPER'S DIVISION.

(PAUL H. FOLSON, CHIEF.)

Statement of the work performed by the bookkeeper's division for the fiscal year ending June 30, 1879.

Date.	Number of pay requisitions.	Amount of pay requisitions.	Number of repay regulations.	Amount of repay regulations.	Letters received.	Letters written.	Accounts journaled, entered, and balanced.	Ledger extracts for settlements.	Answers to inquiries for accounts on ledgers.	Accounts received.	Accounts settled.	Summary statements entered.	Checks entered and ordered.	Amount of checkages.
1878.														
July	246	\$2,182,315 70	44	\$130,530 69	238	361	163	45	100	1	1	97	17	\$101 36
August	165	1,670,246 45	36	156,012 44	178	327	15	34	102			31	1	21 44
September	157	1,188,040 63	20	25,016 40	201	517	20	52	76			49	15	128 78
October	189	1,616,657 88	32	305,353 31	176	335	17	35	40			80	10	352 48
November	117	1,788,730 32	19	99,627 37	157	208	21	44	47			65	15	126 39
December	180	1,080,040 00	11	35,687 00	134	277	134	77	61	2	2	148	6	53 25
1879.														
January	177	1,807,186 92	65	1,069,792 01	151	318	82	37	54	1	1	71	12	64 70
February	190	2,270,036 45	46	705,858 82	161	268	37	36	70			62	19	1,584 34
March	202	2,569,695 72	38	953,001 24	161	209	35	42	114			75	21	1,504 50
April	135	3,317,813 38	56	1,046,357 75	172	216	89	80	207			81	9	434 31
May	271	2,552,430 46	30	400,187 35	148	341	71	49	291	1	1	64	25	295 23
June	211	6,209,950 53	20	5,191,715 21	100	307	33	40	215	4	4	40	8	32 01
Total	2,234	25,931,960 56	423	10,113,089 68	2,027	3,726	737	599	1,383	9	9	823	167	2,608 03

PRIZE-MONEY AND RECORD DIVISION.

(BENJAMIN P. DAVIS, Chief.)

Statement of the work performed by the prize-money and record division for the fiscal year ending June 30, 1879.

Date.	Letters.		Claims.			Amount paid, prize-money.	Records.				
	Received.	Written.	Received.	Settled.	Rejected.		Letters keyed in.	Letters keyed out.	Letters recorded.	Letters indexed.	Dead let- ters reg- istered.
1878.											
July	128	141	17	14	.....	\$1,042 77	1,275	1,261	1,547	2,316	6
August	143	169	16	16	.....	939 08	1,136	1,264	1,443	2,448	5
September	143	178	16	15	.....	715 48	1,230	1,227	3,599	4,196	9
October	141	173	23	21	.....	1,434 82	1,102	1,243	3,704	4,315	13
November	120	142	20	18	.....	658 05	1,088	1,205	4,610	5,468	2
December	100	109	59	59	.....	1,367 58	941	982	2,466	3,329	6
1879.											
January	140	164	27	27	.....	1,042 12	1,072	1,260	3,701	4,864	4
February	234	267	26	26	.....	1,426 14	1,814	1,320	2,454	4,176	2
March	221	277	27	27	.....	950 03	2,206	2,079	2,038	3,309	6
April	186	252	18	17	.....	719 98	1,859	1,890	1,800	4,164	16
May	162	178	35	21	14	932 08	1,330	1,629	1,450	4,101	11
June	132	159	31	22	8	1,087 73	1,709	1,642	1,586	3,767	6
Total	1,850	2,209	315	283	22	13,810 71	16,337	17,002	30,448	46,453	86

This division is charged also with the preparation of all reports and tabular statements called for by Congress and the Secretary of the Treasury, keeping a record of appointments, resignations, removals, and absences, the care and issuing of stationery used in the office, and the payment of salaries to employés.

BOUNTY, ARREARS OF PAY, AND GENERAL CLAIMS.

(ROBERT KRARON, Chief.)

Statement of the work performed by the general claims division for the fiscal year ending June 30, 1879.

Date.	Claims received.	Claims adjusted.	Amount involved.	Letters received.	Letters written.	Reports on application for pension.	Reports on application for bounty land.	Reports on admission to Naval Asylum.
1878.								
On hand June 30	88	.....	.....	.....	.....	.....	.....	.....
July	91	107	\$12,350 34	493	466	14	.....	.....
August	132	129	11,341 69	455	504	27	.....	.....
September	76	81	8,345 06	506	235	42	.....	.....
October	29	72	15,787 13	363	270	63	.....	.....
November	71	75	10,657 32	382	290	51	.....	.....
December	43	61	13,040 93	374	256	27	.....	1
1879.								
January	66	44	15,145 29	367	416	14	.....	.....
February	85	69	7,870 76	524	461	47	.....	1
March	296	95	9,529 62	1,411	1,125	76	.....	1
April	310	175	11,325 23	1,169	1,069	47	.....	1
May	179	106	9,690 57	1,049	779	80	.....	1
June	157	201	11,802 83	712	863	99	.....	.....
Total	1,637	1,305	136,193 77	7,895	6,984	608	.....	14

BOOKKEEPER'S DIVISION.

(PART II. FOISON, CMG.)

Statement of the work performed by the bookkeeper's division for the fiscal year ending June 30, 1879.

Date.	Number of pay requisitions.	Amount of pay requisitions.	Number of repay requisitions.	Amount of repay requisitions.	Letters received.	Letters written.	Accounts journalized, entered, and balanced.	Ledger extracts for settlement.	Answers to inquiries for accounts on ledgers.	Accounts received.	Accounts settled.	Summary statements entered.	Checks entered and ordered.	Amount of checkages.
1878.														
July.....	240	\$3,182,315 70	44	\$130,530 00	238	361	183	45	100	1	1	97	17	\$101 16
August.....	162	1,670,246 45	36	158,012 44	178	327	15	24	102	.....	.....	31	1	21 44
September.....	157	1,188,040 03	29	92,016 40	201	317	20	52	76	.....	.....	40	15	128 78
October.....	183	1,516,647 90	32	302,533 31	176	335	17	35	40	.....	.....	30	19	352 48
November.....	117	1,788,320 22	19	90,627 37	157	298	21	44	47	.....	.....	85	15	126 39
December.....	180	1,080,040 60	11	33,687 00	134	277	134	77	61	2	2	148	6	52 25
1879.														
January.....	177	1,807,186 92	65	1,069,702 01	151	318	82	37	54	1	1	71	12	64 76
February.....	190	2,270,036 45	46	705,858 82	161	268	37	36	76	.....	.....	52	19	1,584 34
March.....	202	2,309,695 72	38	953,001 24	151	260	35	42	114	.....	.....	75	21	1,504 50
April.....	135	1,347,813 39	56	1,046,357 75	172	216	89	30	207	.....	.....	81	9	434 31
May.....	271	1,322,430 46	30	400,187 85	148	341	71	49	291	1	1	64	25	205 23
June.....	211	6,200,930 53	26	5,191,715 21	160	307	33	40	215	4	4	40	8	32 01
Total.....	2,224	25,931,960 56	423	10,113,089 68	2,027	3,725	737	530	1,383	9	9	823	167	3,008 65

PRIZE-MONEY AND RECORD DIVISION.

(BENJAMIN P. DAVIS, Chief.)

Statement of the work performed by the prize-money and record division for the fiscal year ending June 30, 1879.

Date.	Letters.		Claims.			Amount paid, prize-money.	Records.				
	Received.	Written.	Received.	Settled.	Rejected.		Letters keyed in.	Letters keyed out.	Letters recorded.	Letters indexed.	Dead letters registered.
1878.											
July	128	141	17	14		\$1,642 77	1,275	1,261	1,547	2,316	6
August	143	169	16	16		933 08	1,136	1,264	1,443	2,448	5
September	143	178	16	15		715 48	1,236	1,227	3,569	4,190	9
October	141	173	23	21		1,434 82	1,102	1,243	3,704	4,315	13
November	120	142	20	18		658 05	1,088	1,205	4,610	5,463	2
December	100	109	50	59		1,367 53	941	982	2,486	3,329	6
1879.											
January	140	164	27	27		1,042 12	1,072	1,260	3,701	4,864	4
February	234	267	26	26		1,426 14	1,314	1,320	2,454	4,170	2
March	221	277	27	27		950 03	2,200	2,079	2,038	3,309	6
April	186	232	18	17		719 98	1,850	1,890	1,800	4,164	16
May	102	178	35	21	14	932 08	1,339	1,629	1,450	4,101	11
June	132	159	31	22	8	1,087 73	1,769	1,642	1,588	3,707	6
Total	1,850	2,209	315	283	22	13,810 71	16,337	17,002	30,448	40,453	86

This division is charged also with the preparation of all reports and tabular statements called for by Congress and the Secretary of the Treasury, keeping a record of appointments, resignations, removals, and absences, the care and issuing of stationery used in the office, and the payment of salaries to employes.

BOUNTY, ARREARS OF PAY, AND GENERAL CLAIMS.

(ROBERT KEARON, Chief.)

Statement of the work performed by the general claims division for the fiscal year ending June 30, 1879.

Date.	Claims received.	Claims adjusted.	Amount involved.	Letters received.	Letters written.	Reports on application for pension.	Reports on application for bounty land.	Reports on admission to Naval Asylum.
1878.								
On hand June 30	88							
July	91	167	\$12,359 34	493	406	14		
August	132	129	11,341 69	455	504	27		3
September	76	81	8,345 06	506	335	42		3
October	83	72	15,787 13	363	370	63		3
November	71	75	10,077 32	382	390	81		1
December	43	61	13,040 93	374	336	27		1
1879.								
January	66	44	15,145 20	367	416	14		
February	95	69	7,870 76	524	461	47		1
March	206	95	9,329 62	1,411	1,125	76		1
April	310	175	11,335 23	1,169	1,009	47		1
May	179	108	9,620 57	1,019	779	80		1
June	157	291	11,802 83	712	863	90		
Total	1,637	1,305	136,195 77	7,805	6,984	608		14

REPORT OF THE FIFTH AUDITOR OF THE TREASURY.

TREASURY DEPARTMENT,
FIFTH AUDITOR'S OFFICE,
Washington, November 1, 1879.

SIR: Herewith are submitted the operations of this office for the fiscal year ending June 30, 1879.

* * * * *

The adjustments required the examination of ninety-one thousand five hundred and seventy-one vouchers, amounting to \$661,943,492.73, and were made with commendable promptness. The clerks employed in the office are entitled to my thanks for strict regard to the interests of the government and attention to the duties committed to their care.

Very respectfully, your obedient servant,
J. H. ELA, *Auditor.*

Hon. JOHN SHERMAN,
Secretary of the Treasury.

NOTE.—The tables pertaining to this Report are omitted for want of space, but they are printed in the pamphlet edition of the Auditor's report.

REPORT OF THE SIXTH AUDITOR OF THE TREASURY.

OFFICE OF THE AUDITOR OF THE TREASURY,
FOR THE POST-OFFICE DEPARTMENT,
Washington, October 22, 1879.

SIR: I have the honor to submit the following report of the business operations of this office for the fiscal year ended June 30, 1879. My annual report to the Postmaster-General, now in course of preparation, will exhibit in detail the financial transactions of the Post-Office Department during the past fiscal year. The following is a summary of the principal labors performed by the several divisions during the year, viz:

EXAMINING DIVISION.—(Benjamin Lippincott, chief.)

The business of the Examining Division for the last fiscal year has been fully completed, and the following tables exhibit, as far as may be, the work performed:

Number of quarterly accounts-current received during the fiscal year:

Quarter ending September 30, 1878.....	38, 841
Quarter ending December 31, 1878	39, 905
Quarter ending March 31, 1879.....	40, 821
Quarter ending June 30, 1879	40, 874
Total	160, 441
Increase	7, 305

Number of accounts settled by stamp-clerks during the fiscal year:

Quarter ending September 30, 1878.....	38, 365
Quarter ending December 31, 1878.....	39, 505
Quarter ending March 31, 1879	40, 313
Quarter ending June 30, 1879	40, 369
Total	158, 552
Increase	6, 341

Number of accounts-current examined and passed to the Registering Division during the fiscal year:

Quarter ending September 30, 1878.....	38,365
Quarter ending December 31, 1878.....	39,505
Quarter ending March 31, 1879.....	40,313
Quarter ending June 30, 1879.....	40,369
Total	158,552
Increase	6,341

Amount involved in the settlement of quarterly accounts:

Quarter ending September 30, 1878.....	\$6,808,843 54
Quarter ending December 31, 1878.....	7,407,058 05
Quarter ending March 31, 1879.....	7,788,655 12
Quarter ending June 30, 1879.....	7,358,344 23
Total	29,362,900 94
Increase	683,237 83

Number of post-offices of the first and second classes receiving allowances for clerk hire, light, fuel, rent, &c.....	425
Number of post-offices of the third and fourth classes receiving allowances for clerk hire for separating the mails.....	1,029

Total number of post-offices of all classes receiving allowances..... 1,454

REGISTERING DIVISION.—(Joseph B. Will, chief.)

During the fiscal year ended June 30, 1879, the number of accounts registered and amounts therein involved were as follows:

Third quarter, 1878.....	38,365	\$6,808,843 54
Fourth quarter, 1878.....	39,505	7,407,058 05
First quarter, 1879.....	40,313	7,788,655 12
Second quarter, 1879.....	40,369	7,358,344 23
Total	158,552	29,362,900 94
Increase	6,341	683,237 83

Number of changes of postmasters reported from the appointment office of the Post-Office Department entered during the fiscal year was as follows..... 11,363

Decrease from the last fiscal year..... 1,455

BOOKKEEPING DIVISION.—(James T. Smith, chief.)

The following tabular statements show the distribution of the work of the division, the increase therein, and, in part, the labor performed in making up the auxiliary books prepared on the division:

Ledgers of mail-contractors' accounts.

Section.	States.	Number of ledgers.	Current accounts.	Day-book entries journalized.
1	Star and steamboat service in: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Virginia, West Virginia, Maryland, North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi—			
	Railroad and ocean transportation and journalizing.....	6	3,057	6,710
2	Star and steamboat service in: Indiana, Illinois, Tennessee, Wisconsin, Ohio, Iowa, Missouri, Kentucky, Michigan, Kansas, Nebraska, Oregon, Minnesota, California, Nevada, Texas, Louisiana, Arkansas, and Territories.	6	3,250	.....
	Total	12	6,307	6,716
	Increase		167	2,230

Ledgers of postmasters' accounts.

Section.	States.	Number of ledgers.	Current accounts.	Late accounts.
1	Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, and Georgia.	5	4, 134	464
2	New York, New Jersey, Delaware, and Florida.	6	4, 006	501
3	Pennsylvania and West Virginia.	5	4, 193	570
4	Virginia, North Carolina, South Carolina, Maryland, and District of Columbia.	6	4, 263	510
5	Alabama, Louisiana, Texas, Arkansas, and Mississippi.	7	4, 266	1, 028
6	Missouri, Kentucky, and Tennessee.	6	4, 264	871
7	Ohio and Indiana.	5	3, 020	737
8	Illinois, Michigan, and Nebraska.	6	3, 986	761
9	Wisconsin, Iowa, and Minnesota.	5	3, 741	624
10	California, Oregon, Nevada, Kansas, Colorado, and Territories.	6	4, 143	832
	Total	57	40, 916	6, 898
	Increase	6	1, 769	1, 046

Ledger of general, special, and miscellaneous accounts.

	Number of accounts.	Amount.
Revenue of Post-Office Department for fiscal year 1879	8	\$30, 041, 982 86
Grants from the Treasury in aid of the revenues	1	3, 071, 000 00
Total receipts		33, 112, 982 86
Expenditures charged to appropriations for fiscal year 1879	42	33, 073, 437 82
Balance available for accrued liabilities		39, 545 04
Paid indebtedness accruing in former years	16	370, 461 63
Official stamps sold to executive departments	6	388, 107 60

Auxiliary books made up on the division.

	Number of entries.	Increase over last year.
Stamp journal	4, 821	1, 251
Day-books	6, 716	2, 238
Deposit-books (deposits at designated post-offices)	18, 181	10, 066
Cash-book (deposits at treasury depositories)	10, 116	5, 237
Total	39, 834	19, 692

Number of auxiliary books from which entries are made. 125
 Approximate number of entries made in ledgers during the year. 528, 707

	Number.	Amount.
Warrants issued by the Postmaster-General and countersigned by the Auditor, passed and registered during the fiscal year	13, 086	\$3, 533, 440 20
Decrease		391, 645 57
Increase	1, 627	
Drafts drawn by the Third Assistant Postmaster-General and countersigned by the Auditor, passed and registered during the fiscal year	23, 350	2, 317, 247 33
Decrease	5, 356	573, 857 93

STATING DIVISION.—(Wm. H. Gunnison, chief.)

The statements following show the amount of work performed during the last fiscal year.

Statement of the number of general postal accounts of postmasters, the increase in the number, and the classification of the officers, for the fiscal year ended June 30, 1879.

Number of section.	States and Territories.	Presidential offices.					Fourth-class offices.					No. of accounts in each State.	Increase in each State.	No. of accounts in each section.	Increase in each section.
		Draft.	Collection.	Depositing.	Total.	Increase.	Collection.	Depositing.	Special.	Special and depositing.	Total.				
1	Maine	3	20	8	31	6	602	252	15	22	891	7	922	12	
	New Hampshire.....	3	15	6	24	*2	801	118	4	3	420	4	450	2	
	Vermont.....	5	14	2	21	1	836	123	8	12	474	1	495	1	
	Massachusetts	4	87	36	107	2	162	162	8	10	638	6	745	8	
	Total.....	15	116	52	183	6	1,697	655	30	47	2,420	18	2,612	24	
2	New York (A to Q)....	11	97	27	135	3	1,147	630	68	124	1,050	36	2,004	39	
	Nevada.....	0	2	9	11	1	21	73	5	4	103	16	114	17	
	Total.....	11	99	36	146	4	1,168	703	63	128	2,063	52	2,208	56	
3	Pennsylvania (A to Q).....	3	77	14	94	0	1,630	638	50	16	2,343	28	2,437	28	
	Dakota.....	0	5	1	6	3	145	90	35	4	274	70	280	73	
	Total.....	3	82	15	100	3	1,784	728	85	20	2,617	98	2,717	101	
4	Wisconsin	2	54	6	62	4	962	210	57	36	1,265	20	1,327	24	
	West Virginia.....	1	7	0	8	0	650	167	13	0	836	12	844	12	
	Oregon.....	0	0	1	7	0	179	146	22	0	847	25	854	25	
	Total.....	3	61	7	77	4	1,797	523	92	36	2,448	57	2,525	61	
5	North Carolina.....	1	11	1	13	2	1,186	128	30	0	1,353	64	1,366	60	
	South Carolina.....	1	10	2	13	1	475	08	11	1	555	22	568	22	
	Georgia.....	2	19	2	23	0	754	105	56	25	940	69	963	69	
	Total.....	4	40	5	49	3	2,415	301	97	35	2,848	155	2,897	158	
6	Kansas	1	33	11	45	11	911	370	109	0	1,350	156	1,395	167	
	Minnesota.....	2	18	11	31	3	679	154	90	4	927	49	958	52	
	Colorado.....	1	8	7	16	2	143	112	19	3	277	26	293	26	
	Utah Territory.....	0	1	3	4	1	86	90	17	0	193	7	197	8	
	Total.....	4	60	32	96	17	1,810	686	235	7	2,747	238	2,843	255	
7	Ohio	9	92	8	109	*2	1,613	491	40	61	2,204	6	2,313	4	
	Total.....	9	92	8	109	*2	1,613	491	40	61	2,204	6	2,313	4	
8	Illinois.....	3	134	4	161	6	1,584	165	23	31	1,803	19	1,964	10	
	Delaware.....	0	0	0	0	2	70	31	0	1	101	1	107	3	
	District of Columbia.....	0	0	0	0	0	2	2	0	1	5	0	5	0	
	Washington Territory.....	0	2	1	3	0	152	28	5	14	199	30	202	30	
	Montana Territory.....	0	6	0	6	0	59	53	6	1	110	0	125	0	
	Chicago, Ill.....	0	0	1	1	0	0	0	0	0	0	0	1	0	
	Cincinnati, Ohio.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	Saint Louis, Mo.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	San Francisco, Cal.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	New Orleans, La.....	0	0	1	1	1	0	0	0	0	0	0	1	1	
	Washington, D. C.....	0	0	1	1	0	0	0	0	0	0	0	1	0	
	Total.....	3	168	11	182	12	1,876	269	34	48	2,227	50	2,409	62	
9	Arkansas.....	0	7	1	8	0	500	295	5	2	892	92	900	92	
	Missouri.....	0	45	3	48	0	1,400	149	21	15	1,594	32	1,643	38	
	Total.....	0	52	4	56	0	1,900	444	26	17	2,486	124	2,542	130	

* Decrease.

number of general postal accounts of postmasters, &c.—Continued.

ies.	Presidential offices.					Fourth-class offices.					No. of accounts in each State.	Increase in each State.	No. of accounts in each section.	Increase in each section.
	Draft.	Collection.	Depositing.	Total.	Increase.	Depositing.	Special.	Special and depositing.	Total.	Increase.				
Z)	4	33	8	35	1	214	1	10	264	5	899	6		
...	2	21	5	28	1	102	65	32	1,269	36	1,287	37		
...	0	0	0	0	0	102	0	0	102	0	102	0		
...	0	1	0	1	0	102	0	0	102	0	102	0		
...	0	3	0	3	0	102	0	0	102	0	102	0		
...	0	1	2	3	*1	123	16	1	57	6	91	0		
...	6	49	15	70	1	474	92	49	2,371	53	2,441	54		
...	1	21	3	25	*1	241	36	22	1,634	58	1,650	57		
...	1	4	6	11	0	243	3	2	99	1	110	1		
...	0	21	27	48	4	283	22	18	788	22	836	26		
...	2	46	36	84	3	517	61	42	2,521	81	2,605	84		
...	4	66	2	72	5	228	35	31	1,538	33	1,610	38		
...	1	36	15	52	1	129	10	32	626	2	678	3		
...	5	102	17	124	6	357	45	65	2,164	35	2,288	41		
...	0	83	5	87	2	146	37	14	1,417	39	1,514	41		
...	2	37	1	40	0	294	32	16	1,175	55	1,215	55		
...	0	2	1	3	1	37	12	0	79	26	82	27		
...	11	122	7	140	3	477	81	30	2,671	120	2,811	123		
...	1	2	4	7	*1	69	13	0	302	37	309	30		
...	0	8	1	9	0	97	12	7	413	28	422	28		
...	0	16	4	20	4	77	14	2	642	37	662	41		
...	3	12	1	14	*1	201	92	21	1,299	77	1,315	76		
...	4	38	10	62	2	484	131	30	2,656	170	2,708	181		
...	0	00	12	81	8	112	42	62	1,247	25	1,328	33		
...	0	7	5	12	1	151	12	12	658	28	670	29		
...	2	28	10	49	5	94	3	11	300	*3	445	3		
...	0	0	1	1	1	0	0	0	0	0	1	1		
...	0	0	1	1	1	0	0	0	0	0	1	1		
...	0	0	1	1	1	0	0	0	0	0	1	1		
...	0	0	1	1	1	0	0	0	0	0	1	1		
...	0	0	1	1	0	0	0	0	0	0	1	0		
...	11	95	41	147	18	357	57	85	2,301	51	2,448	69		
Z)...	4	32	13	49	1	234	45	37	769	0	818	1		
...	3	14	4	21	3	126	22	4	1,073	27	1,094	30		
...	1	15	7	23	6	195	36	2	645	17	668	23		
...	8	61	24	93	10	555	103	43	2,487	44	2,580	54		

*Decrease.

Statement of the number of general postal accounts of postmasters, &c.—Continued.

RECAPITULATION.

Number of general accounts of the first, second, and third classes, June 30, 1879				1,708	
Number of general accounts of the fourth class, June 30, 1879				39,239	
Total number of accounts					40,947
Number of general accounts of the first, second, and third classes, June 30, 1878			1,612		
Number of general accounts of the first, second, and third classes made fourth class July 1, 1878		42			
Number of general accounts of the first, second, and third classes made fourth class September 13, 1878		2			
Number of general accounts of the first, second, and third classes made fourth class November 20, 1878		1			
Number of general accounts of the first, second, and third classes made fourth class January 1, 1879		9			
Number of general accounts of the first, second, and third classes made fourth class April 1, 1879		1			
			55	1,557	
Number of general accounts of the fourth class made Presidential October 1, 1878	1				
Number of general accounts of the fourth class made Presidential January 1, 1879	146				
Number of general accounts of the fourth class made Presidential April 1, 1879	4			151	
Total number of Presidential accounts June 30, 1879					1,708
Increase in the number of general accounts of the first, second, and third classes				96	
Increase in the number of general accounts of the fourth class				1,361	
Total increase					1,457

	Draft.	Collection.	Depositing.	Special.	Special and depositing.	Totals.
Total number of draft offices (Presidential)	99					
Total number of collection offices (Presidential)		1,289				
Total number of depositing offices (Presidential)			320			
Total Presidential offices	99	1,289	320			1,708
Total number of collection offices (fourth class)		29,174				
Total number of depositing offices (fourth class)			8,051			
Total number of special offices (fourth class)				1,281		
Total number of special and depositing offices (fourth class)					733	
Total fourth-class offices		29,174	8,051	1,281	733	39,239
Total offices						40,947

Statement showing the number of changes of offices and postmasters during the fiscal year ended June 30, 1879.

Changes.	Quarter ending—				Totals.
	September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.	
Offices established	446	302	570	834	2,248
Offices re-established	77	81	106	128	391
Offices discontinued	254	329	283	317	1,183
New bonds	217	306	431	634	1,588
Miscellaneous	1,194	1,930	2,249	2,024	7,397
Totals	2,188	3,038	3,643	3,937	12,806

Condition of the general postal accounts of late postmasters for the fiscal year ended June 30, 1879.

	Quarter ending—				Totals.
	September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.	
Postmasters adjusted during the year	2,481	2,445	2,464	1,707	9,097
Postmasters unadjusted at close of year					8,505
					17,602
Balance of late accounts over year					1,310
Balance of late accounts reported last year					10
Balance of late accounts unreported last year					1,113

Statement, per quarter, of the balances due the United States for the payment of claims, according to the respective classification of their offices.

	Number	Amount.
Per 30, 1878	1,300	\$71,007 92
Per 31, 1878	2,331	78,719 35
Per 31, 1879	1,108	63,322 06
Per 30, 1879	1,706	148,931 34
Total year	6,617	301,080 67

COLLECTING DIVISION.—(E. J. Evans, chief.)

Summary of principal work on this division for the fiscal year.

	Number.	Amount.
Present postmasters during the fiscal year—		
September 30, 1878	570	\$85,125 35
December 31, 1878	331	43,874 08
March 31, 1879	510	71,036 94
June 30, 1879	731	90,553 80
	2,142	290,590 83
		25,447 15
	55	
Draws upon which drafts were issued:		
September 30, 1878	47	146,802 98
December 31, 1878	15	6,422 87
March 31, 1879	24	1,666 01
June 30, 1879	15	104,356 14
	101	259,248 00
	96	154,727 20
Present postmasters reported for payment:		
September 30, 1878	108	5,000 75
December 31, 1878	362	8,174 35
March 31, 1879	97	6,529 30
June 30, 1879	300	8,173 68
	877	28,888 08
	650	
Postmasters and contractors submitted for suit during fiscal year		
September 30, 1878	10	
December 31, 1878	12	
March 31, 1879	24	
June 30, 1879	10	
	56	
Judgments, &c., including interest, during the fiscal year.		

Accounts copied during the fiscal year:

Quarter ended September 30, 1878.....	4,375
Quarter ended December 31, 1878.....	5,577
Quarter ended March 31, 1879.....	4,493
Quarter ended June 30, 1879.....	5,640
Total	20,085
Increase	611

Letters received during the fiscal year:

Quarter ended September 30, 1878.....	83,324
Quarter ended December 31, 1878.....	78,993
Quarter ended March 31, 1879.....	87,652
Quarter ended June 30, 1879.....	79,670
Total	329,639
Decrease	9,265

Letters sent during the fiscal year:

Quarter ended September 30, 1878.....	84,673
Quarter ended December 31, 1878.....	53,229
Quarter ended March 31, 1879.....	56,381
Quarter ended June 30, 1879.....	62,505
Total	256,788
Increase	76,352

Number of circulars addressed and transmitted during the fiscal year:

Quarter ended September 30, 1878.....	8,327
Quarter ended December 31, 1878.....	12,690
Quarter ended March 31, 1879.....	10,676
Quarter ended June 30, 1879.....	11,615
Total	43,308
Decrease	1,490

FOREIGN MAIL DIVISION.—(R. S. Widdicombe, chief.)

This division has charge of the postal accounts with foreign countries, and the accounts with steamship companies for ocean transportation of the mails.

Amounts paid the United States on the settlement of postal accounts with foreign governments.

United Kingdom of Great Britain and Ireland.....	\$43,063 48
Japan.....	6,647 07
Canada.....	1926 24
Spain.....	758 93
Empire of Germany.....	699 54
Queensland.....	76 30
Italy.....	72 81
Switzerland.....	52 70
Belgium.....	41 78
Netherlands.....	36 76
Norway.....	32 90
Sweden.....	25 54
Austria.....	21 15
Denmark.....	21 06

Total amount received..... 54,469 30

Amounts paid foreign governments on the settlement of postal accounts.

Belgium.....	\$13,266 22
Empire of Germany.....	7,259 87
Republic of France.....	5,246 56
Denmark.....	3,209 51
Italy.....	2,555 98
St. Thomas.....	1,875 82
Sweden.....	1,326 00

Total amount paid..... 34,739 96

Number of duplicates registered during the fiscal year.

Sent to—	Quarter ended—				Received from—	Quarter ended—			
	September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.		September 30, 1878.	December 31, 1878.	March 31, 1879.	June 30, 1879.
The United Kingdom.....	356	309	268	370	The United Kingdom.....				
German Empire.....	232	241	217	227	German Empire.....				
France.....	187	180	163	181	France.....				
Belgium.....	131	138	123	120	Belgium.....				
Denmark.....	52	52	52	52	Denmark.....				
Spain.....	73	76	72	73	Spain.....				
Switzerland.....	73	77	73	73	Switzerland.....				
Norway.....	52	53	50	51	Norway.....				
Netherlands.....	82	84	80	82	Netherlands.....				
Sweden.....	41	41	38	30	Sweden.....				
Italy.....	73	77	73	74	Italy.....				
West Indies, &c.....	219	254	288	385	West Indies, &c.....	103	118	122	99
Total.....	1,571	1,642	1,597	1,727	Total.....	103	118	122	99
Increase.....	149	176	55	125	Increase.....	31	32	14	9

Total number of duplicates registered.....	6,979
Total increase.....	591
Number of reports of ocean postages made to the Postmaster-General.....	234
Increase.....	30
Total amount reported.....	\$215,306 24
Increase.....	5,141 52

PAY DIVISION.—(R. F. Crowell, chief.)

Reference is made to the following tabular statement showing quarterly the number and amount of collections made, and the number and amount of accounts adjusted and reported during the fiscal year ended June 30, 1879.

	No.	Amount.
Accounts of railroad companies for transporting the mails, settled during the fiscal year ended June 30, 1879:		
Quarter ended September 30, 1878.....	949	\$2,320,624 33
Quarter ended December 31, 1878.....	962	2,339,152 19
Quarter ended March 31, 1879.....	975	2,368,408 68
Quarter ended June 30, 1879.....	1,004	2,414,900 00
Total.....	3,890	9,438,085 80
Increase.....	223	
Decrease.....		523,592 81
Collections orders sent to railroad companies, and amounts paid thereon by postmasters, during the fiscal year:		
Quarter ended September 30, 1878.....	11,504	906,293 16
Quarter ended December 31, 1878.....	11,725	1,044,279 24
Quarter ended March 31, 1879.....	11,650	1,108,395 92
Quarter ended June 30, 1879.....	11,737	1,030,680 63
Total.....	46,712	4,095,549 25
Increase.....	2,077	285,151 16
Accounts of mail-contractors and subcontractors, steamboat service, settled during the fiscal year:		
Quarter ended September 30, 1878.....	105	171,873 44
Quarter ended December 31, 1878.....	115	187,642 21
Quarter ended March 31, 1879.....	104	164,257 08
Quarter ended June 30, 1879.....	114	184,243 30
Total.....	438	708,016 03

	No.	Amount.
Collection orders sent to mail-contractors, steamboat service, and the amounts paid thereon by the postmasters during the fiscal year:		
Quarter ended September 30, 1878	532	\$15,782 00
Quarter ended December 31, 1878	619	15,946 68
Quarter ended March 31, 1879	645	21,125 28
Quarter ended June 30, 1879	648	20,523 53
Total	2,464	75,385 25
Accounts of mail-contractors and subcontractors, star service, settled during the fiscal year:		
Quarter ended September 30, 1878	9,950	1,212,480 62
Quarter ended December 31, 1878	10,381	1,289,990 66
Quarter ended March 31, 1879	10,835	1,440,196 40
Quarter ended June 30, 1879	10,805	1,490,777 27
Total	41,971	5,434,346 95
Increase	5,865	
Decrease		311,004 25
Collection orders sent to mail-contractors, star service, and amounts paid thereon by postmasters, during the fiscal year:		
Quarter ended September 30, 1878	20,400	248,209 52
Quarter ended December 31, 1878	18,411	225,964 84
Quarter ended March 31, 1879	17,508	224,545 07
Quarter ended June 30, 1879	16,509	198,760 39
Total	72,828	997,479 80
Decrease	12,475	625,284 31
Accounts of ocean mail and consular postal service settled during the fiscal year:		
Quarter ended September 30, 1878	57	61,843 32
Quarter ended December 31, 1878	51	49,313 12
Quarter ended March 31, 1879	57	56,889 13
Quarter ended June 30, 1879	47	42,139 63
Total	212	210,185 21
Decrease	7	7,578 94
Number and amount of settlements of special carriers' accounts during the fiscal year:		
Quarter ended September 30, 1878	1,838	9,790 07
Quarter ended December 31, 1878	1,218	8,561 43
Quarter ended March 31, 1879	1,215	8,740 71
Quarter ended June 30, 1879	1,246	9,129 78
Total	4,717	36,222 99
Decrease	280	29,480 71
Number and amount of settlements of mail-messengers during the fiscal year:		
Quarter ended September 30, 1878	4,447	108,407 86
Quarter ended December 31, 1878	4,324	100,364 79
Quarter ended March 31, 1879	4,531	165,648 08
Quarter ended June 30, 1879	4,660	167,907 45
Total	17,962	642,470 18
Increase	631	11,542 97
Number and amount of settlements of accounts of superintendents, assistant superintendents of railway postal service, and special agents of the Post-Office Department during the fiscal year:		
Quarter ended September 30, 1878	195	42,617 65
Quarter ended December 31, 1878	218	44,274 79
Quarter ended March 31, 1879	198	40,870 26
Quarter ended June 30, 1879	213	46,359 64
Total	824	174,062 34
Increase	89	
Decrease		6,206 58

	No.	Amount.
Number and amount of settlements of accounts of railway postal clerks, route-agents, mail-route messengers, and local mail-agents during the fiscal year:		
Quarter ended September 30, 1878	3,000	\$674,635 03
Quarter ended December 31, 1878	2,934	685,379 82
Quarter ended March 31, 1879	3,002	662,526 10
Quarter ended June 30, 1879	2,820	644,524 71
Total	11,765	2,667,065 66
Increase	291	170,401 83
Number and amount of settlements of accounts for free-delivery system during the fiscal year:		
Quarter ended September 30, 1878	2,466	400,063 65
Quarter ended December 31, 1878	2,546	409,492 41
Quarter ended March 31, 1879	2,583	468,411 82
Quarter ended June 30, 1879	2,972	473,064 15
Increased pay for first and second quarters 1879	1,783	73,219 27
Total	11,749	1,942,261 30
Increase	2,337	124,365 71
Number and amount of settlements of accounts of miscellaneous payments during the fiscal year:		
Quarter ended September 30, 1878	297	257,084 60
Quarter ended December 31, 1878	215	210,929 52
Quarter ended March 31, 1879	207	242,022 04
Quarter ended June 30, 1879	201	204,643 31
Total	920	914,079 47
Decrease	24	70,180 03

MONEY-ORDER DIVISION.—(John Lynch, chief.)

Statement showing the principal transactions of the division during the fiscal year ended June 30, 1879.

	Number.	Value.	Increase.		Decrease.	
			Number.	Value.	Number.	Value.
Number of money-order statements received, examined, and registered	225,248		13,139			
Domestic money-orders issued	6,372,243	\$88,254,641 02	659,126	\$6,812,276 15		
Canadian international money-orders issued	16,231	316,283 98	2,645	50,901 55		
British international money-orders issued	64,310	894,859 25	8,964	87,075 93		
German international money-orders issued	47,342	829,788 36	4,028	46,371 52		
Swiss international money-orders issued	5,135	90,171 25	542	3,890 51		
Italian international money-orders issued	4,070	103,352 11	121			\$2,081 42
Money-order, paid, received, examined, assorted, checked, and filed:						
Domestic	6,360,611	87,427,047 26	781,270	6,655,592 00		
Canadian international	20,757	339,072 45	623			112 44
British international	10,749	345,761 00			1,427	17,442 09
German international	25,402	639,512 68			3,949	27,270 02
Swiss international	2,010	56,820 90		2,034 27	43	
Italian international	349	10,040 69	CS	2,169 27		
Money-orders repaid, received, examined, assorted, checked, and filed:						
Domestic	41,609	571,714 98	6,567	63,259 38		
Canadian international	50	806 42			6	220 02
British international	128	2,242 07			75	718 40
German international	145	3,630 34			129	606 46
Swiss international	17	450 13	1	138 57		
Italian international	5	140 00			11	269 50

Statement showing the principal transactions of the division, &c.—Continued.

	Number.	Value.	Increase.		Decrease.	
			Number.	Value.	Number.	Value.
Certificates of deposits received, registered, compared, and checked	372,508	\$64,266,077 08	45,009	\$5,421,055 08		
Transfers received, registered, compared, and checked	7,852	1,318,050 64	544	307,548 43		
Drafts received, registered, compared, and checked	17,902	8,295,931 00	1,073	948,898 52		
Remittances received, registered, compared, and checked	1,472	325,587 89			47	\$301 11
International lists of orders of United States issue received, examined, registered, and checked:						
Canadian	344	315,560 31		56,670 00	88	
British	210	892,681 00	18	97,000 00		
German	205	828,301 37	3	47,300 00		
Swiss	108	95,354 50	2	2,748 07		
Italian	107	103,789 51				1,523 77
International lists of orders of foreign issue received, examined, registered, and checked:						
Canadian (Canadian issue)	344	341,605 18		1,243 87	88	
British (Canadian issue)	216	345,100 64				14,682 72
German (Canadian issue)	262	648,230 35	2			28,088 50
Swiss (Canadian issue)	39	56,382 45		1,204 15		
Italian (Canadian issue)	104	10,302 25		1,050 40		
International accounts of money-order transactions received, examined, registered, adjusted, and settled						
Canadian	4	631,808 85	1	187,640 32		
British	4	1,305,229 96	1	511,601 90		
German	4	1,465,765 50	1	301,225 34		
Swiss	2	142,061 57	1	72,044 41		
Italian	4	110,039 96	1	24,049 00		
Money-orders withdrawn from the files for examination and investigation and returned	1,200		174			
Advices of money-orders sent for, examined, compared, and returned	15,507		2,130			
Money-orders returned for correction	32,000		9,500			
Money-order accounts prepared, entered, and submitted for suit	7	5,070 20			6	10,407 31
Letters written and transmitted	6,500		229			
Commission and error circulars transmitted	80,000		13,552			

NECESSITY FOR AN INCREASE OF CLERICAL FORCE.

The very large and unprecedented increase in the number of post-offices and post-routes during the past three years, the additional work thrown upon this office by reason of the various changes in the postal laws in relation to the manner of adjusting the compensation of post-masters and of paying subcontractors, and the rapid growth of the money-order business, make an increase of the clerical force of this office a necessity.

In my estimates for the service of this office for the fiscal year ending June 30, 1881, submitted to you recently, I have asked for an appropriation for twenty additional clerks; and, in support of that estimate, I beg

to present the following brief statement showing the increase of work since June 30, 1876:

Number of postmaster's accounts settled during fiscal year ended June 30, 1876.....	144,751
Number of postmaster's accounts settled during fiscal year ended June 30, 1879.....	160,441
Increase	15,690
Per cent. of increase.....	10.8
Number of contractor's accounts settled during fiscal year ended June 30, 1876.....	35,601
Number of contractor's accounts settled during fiscal year ended June 30, 1879.....	46,299
Increase	10,698
Per cent. of increase.....	30
Number of money-order offices in operation June 30, 1876.....	3,698
Number of money-order offices in operation June 30, 1879.....	4,844
Increase	1,146
Per cent. of increase.....	31
Number of money-orders issued during fiscal year ended June 30, 1876.....	5,108,009
Number of money-orders issued during fiscal year ended June 30, 1879.....	6,509,331
Increase	1,401,322
Per cent. of increase.....	27
Amount involved in money-order settlements during fiscal year ended June 30, 1876.....	\$153,668,544 23
Amount involved in money-order settlements during fiscal year ended June 30, 1879.....	166,760,029 45
Increase	13,091,485 22
Per cent. of increase.....	8.5

A reference to the reports from the eight divisions of this bureau will show in detail the increase of work during the past fiscal year.

In conclusion, I am pleased to be able to report the work of this office in excellent condition. With rare exceptions, the clerks and employes have been prompt and faithful in the discharge of their official duties. To them and to the intelligent and efficient co-operation of the deputy auditor and the chiefs of divisions I am indebted for the very satisfactory condition of the business of this bureau.

I am, sir, very respectfully,

J. M. MCGREW, Auditor.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE TREASURER OF THE UNITED STATES.

TREASURY OF THE UNITED STATES,
Washington, November 1, 1879.

SIR: I have the honor to submit the following statements pertaining to the business of this office and the state of the Treasury for the fiscal year ended June 30, 1879—a year characterized by great transactions connected with the refunding of the war loans into four per cents, and the resumption of specie payments after a suspension of seventeen years; a year of business which has taxed the industry of the office in all the varied duties devolved upon the Treasurer as charged with the custody of all public moneys received into the Treasury and the disbursement thereof upon the warrants of the Secretary of the Treasury and upon the warrants of the Postmaster-General; as fiscal agent for the payment of interest upon the public debt; as the financial agent of the Government for the issue and redemption of the United States note circulation; as agent, also, for the redemption of the circulating notes of all national banks; as trustee and custodian of bonds held by the Treasury for the security of the circulating notes of national banks and of bonds held as security for public deposits therein; as assessor and collector of all Federal taxes on circulation, capital, and deposits of national banks; as custodian of Indian trust funds and bonds of the Pacific Railway sinking funds; as agent for paying the salaries of the members of the House of Representatives, and as commissioner of the sinking fund of the District of Columbia.

THE STATE OF THE TREASURY.

The following statement is given to show the resources of the Treasury and its demand liabilities on the 30th day of September, 1876, 1877, 1878, and 1879:

Statement of Liabilities and Assets of the Treasury of the United States on September 30, 1876, 1877, 1878, and 1879.

	September 30, 1876.	September 30, 1877.	September 30, 1878.	September 30, 1879.
LIABILITIES.				
Fund for redemption of Certificates of Deposit, (Act of June 8, 1872)	\$34,515,000 00	\$41,675,000 00	\$40,890,000 00	\$31,335,000 00
Post-Office Department Account	1,070,877 01	1,672,707 98	2,151,093 78	2,167,091 50
Disbursing Officers' Balances	14,832,207 98	12,733,913 59	17,040,910 89	26,007,876 95
Fund for redemption of Notes of National Banks "failed," "in liquidation," and "reducing circulation" ..	20,882,504 50	13,602,238 00	9,182,400 00	12,909,883 75
Undistributed Assets of failed National Banks	641,424 89	856,379 42	775,814 12	642,314 33
Five per cent. Fund for redemption of National-Bank Notes	11,100,779 70	14,199,294 60	12,574,232 75	15,062,482 00
Fund for redemption of National-Bank Gold-Notes	671,900 00	1,720 00	1,720 00	219,040 00
Currency and Minor-Coin Redemption-Account	38,746 49	23,104 41	5,987 37	4,213 15
Fractional Silver-Coin Redemption-Account				132,664 10
Interest Account	605,757 00	605,602 25	670,503 00	101,514 75
Interest Account, Pacific Railroads, and Louisville and Portland Canal Company		32,280 00	15,650 40	8,270 00

Statement of Liabilities and Assets of the Treasury of the United States, &c.—Continued.

	September 30, 1876.	September 30, 1877.	September 30, 1878.	September 30, 1879.
LIABILITIES—Continued.				
Treasurer United States, Agent for paying Interest on District of Columbia Bonds.....	\$29,320 14	\$27,558 80	\$40,811 27	\$298,435 54
Treasurer's Transfer Checks outstanding.....	2,243,011 05	2,523,702 79	2,492,885 05	3,653,101 20
<i>Treasurer's General Account.</i>				
Interest due and unpaid.....	5,405,460 09	8,447,804 77	9,345,289 13	11,561,093 77
Called Bonds and Interest.....	1,838,531 85	19,064,191 25	12,015,016 78	31,033,519 05
Gold Certificates.....	29,777,900 00	37,997,500 00	32,826,600 00	14,910,900 00
Silver Certificates.....			2,028,070 00	4,571,850 00
Refunding Certificates.....				3,688,900 00
Special Fund for redemption of Fractional Currency.....		8,265,412 00	10,000,000 00	
Balance, including Bullion Fund.....	42,461,900 19	80,962,581 41	184,959,189 32	145,108,037 30
Total.....	168,024,472 39	243,681,111 25	337,424,964 74	303,485,995 07
ASSETS.				
Gold Coin and Bullion.....	55,423,059 50	107,039,528 85	136,036,302 20	169,827,571 29
Standard Silver Dollars.....			12,155,205 00	31,806,774 00
Fractional Silver Coin.....			6,143,903 02	10,873,898 47
Silver Bullion.....	6,029,308 65	7,425,453 94	9,634,034 48	4,290,124 25
Gold Certificates.....	4,802,180 00	18,934,000 00	9,392,920 00	70,700 00
Silver Certificates.....			1,316,470 00	3,131,130 00
United States Notes.....	73,209,611 08	74,558,308 23	63,049,339 67	48,762,728 01
United States Notes, Special Fund for redemption of Fractional Currency.....		8,265,412 00	10,000,000 00	
National-Bank Notes.....	14,513,988 51	14,109,541 51	9,259,043 81	4,279,958 76
National-Bank Gold-Notes.....	662,000 00	1,720 00	1,720 00	183,640 00
Fractional Currency.....	1,217,270 03	237,203 64	161,081 86	90,978 15
Deposits held by National-Bank Depositories.....	10,696,085 03	10,731,025 90	75,661,403 15	17,836,816 48
Nickel and Minor Coin.....	136,873 51	870,140 54	1,410,898 50	1,524,700 57
New York and San Francisco Exchange.....	23,000 00	333,500 00	367,000 00	1,799,834 51
One and Two Year Notes, &c.....	319 50	593 70	8,016 51	400 40
Redeemed Certificates of Deposit, (Act of June 8, 1872).....			1,345,000 00	2,025,000 00
Quarterly Interest-Checks and Coin-Coupons paid.....	126,812 34	90,012 01	256,900 46	189,579 78
Registered and unclaimed Interest paid.....	398,216 06	333,907 50	370,482 80	22,355 00
United States Bonds and Interest.....	15,008 85			507 64
Interest on District of Columbia Bonds.....	11,991 53	6,562 48	1,345 64	516 97
Refunding Certificates and Interest.....				24,119 74
Pacific Railroads, Sinking Fund.....				45,312 75
Speaker's Certificates.....	416 00	6,255 00	123,802 00	
Deficits, unavailable Funds.....	738,272 00	737,945 95	729,195 64	690,848 30
Total.....	168,024,472 39	243,681,111 25	337,424,964 74	303,485,995 07

Upon comparison of the condition of the public funds upon the dates mentioned two facts appear: the immense increase in coin and bullion and the decrease in the note assets. The aggregate of gold coin and bullion and of silver coin and bullion—including standard silver dollars, which, being coined under the act of February 28, 1878, do not appear in the statement prior to that year—increased from \$61,452,426.15 in 1876 to \$114,464,982.79 in 1877, to \$163,969,444.70 in 1878, and to \$222,807,368.01 in 1879.

The decrease in the aggregate note assets, including credits in depositary banks on other than loan account, has been gradual, the apparent increase in 1877 being due to the failure of the Army bill to become a law, and the accumulation of funds consequent upon withholding pay-

ment to that branch of the service. The note assets ranged as follows on the above dates: In 1876, \$98,419,685.22; in 1877, \$107,004,287.64; in 1878, \$88,772,800.14; and in 1879, \$59,699,080.40.

The decrease in the note balance arises from various causes, notably from the receipt for customs and internal revenue of coin paid out in the purchase of bullion for the coinage of standard silver dollars; from the exchange of notes for gold, and the payment of notes for foreign gold received at the assay office, New York; from the purchase of gold bullion with notes, and the payment of interest upon the public debt in United States notes, and from the payment of arrears of pensions.

The most constant influence in the decrease of the note balance is that which proceeds from the purchase of silver bullion for coinage, thereby depriving the Treasury of an equal amount of note receipts. All the above-mentioned causes of the diminution, except this, can be controlled by the Department. The purchase of silver bullion for gold coin would involve the same loss of note revenues, and this loss will continue as long as the purchases of bullion under the silver-dollar act shall continue. The first bullion for this coinage was bought with gold coin, and subsequent purchases were made with standard silver dollars coined from bullion previously purchased. The coin thus disbursed speedily returned in payment of dues, and, before resumption, every silver dollar or silver certificate paid out for bullion, by its return through the custom-houses, deprived the Treasury of gold coin which would otherwise have been received for duties. Since resumption, however, the Treasury is deprived, by the receipt of coin paid for bullion, of a like amount of United States notes, amounting probably to seven per cent. of the annual revenues. This percentage is greater than the margin between the public receipts and expenditures, and will in time, without the other influences mentioned, render the balance in the Treasury first exclusively metallic, and then exclusively silver.

That this is so, a glance at the monetary operations of the Government will show. The annual receipts from all sources are \$274,000,000. Of this amount at least \$24,000,000 is in silver dollars or in silver certificates, that being the minimum paid annually for silver bullion for coinage, which amount speedily finds its way into the Treasury—the more certainly because payments for bullion are made either at New York or San Francisco, which are both centers of large receipts by the Government. The maximum net note receipts are then \$250,000,000, against which are payments of \$267,000,000 for general expenditures, interest on the public debt, War and Navy Establishment, and pensions, made in notes, or if made in coin, its return decreases the note receipts to that extent. The excess of note expenditures over note receipts is therefore \$17,000,000, which is the annual decrease of the note balance from the silver-dollar coinage alone.

Of the \$59,699,080.40 note balance of the Treasury September 30, 1879, but \$53,042,686.77 is available, the remainder being simply a credit with depository banks. Of the latter sum \$29,240,000, represented by Clearing House certificates outstanding, is, by sections 5193 and 5194, Revised Statutes, held as a special deposit, and cannot be used to create any expansion or contraction of the currency, but only for the redemption of such certificates, leaving \$23,802,686.77 and the current receipts to be applied to the payment of other demands, including the funds for the redemption of national-bank notes; the five per cent. redemption fund being \$15,082,482, and the fund for the redemption of the notes of failed, liquidating, and reducing banks being

\$12,939,889. Demands upon both are now met with United States notes, for the reason that all national-bank notes presented for redemption are paid for from the five per cent. fund upon their receipt, and after assortment that fund is reimbursed from the other to the amount found due.

The arrangement by which the Treasury became in January a member of the New York Clearing House has been of incalculable advantage in establishing resumption and in saving useless handling of money, and may be made to check the depletion of the Treasury of notes by permitting the settlement of balances in coin to the extent that any exigency may demand. But at present the Treasury membership inures to the benefit of the clearing-house banks, and unless a change in the rules is made permitting payment of all or a certain percentage of balances in silver, it may become desirable for the Treasury to withdraw from a relation which renders over thirty millions of lawful money in its vaults unavailable for payment at New York, the point of greatest public disbursement. All checks in payment of called bonds and in payment for foreign gold are now paid in gold. The decrease of notes in the Treasury continues, however, and will keep on until the limitation or cessation of the present silver-dollar coinage.

It is not the function of this office to do more than to set forth the facts. Everything has been done to put silver and gold into circulation. To this end all payments are made at the various offices in silver, gold, and notes—ten per cent. each in silver and gold and the remainder in notes, unless the payee desires more coin. A further saving might be made by suspending the purchase with notes of gold bullion at the various assay offices.

The silver bullion on hand has also decreased during the year from \$9,634,034.48 to \$4,299,124.25 on account of the difficulty in making purchases, as prescribed in the act of February 28, 1878, at the market rate, which is held by the Department to be the equivalent of the London rate.

The ten million fund in United States notes, held for the redemption of fractional currency; has disappeared from the assets under the provisions of the law which devoted it to the payment of arrears of pensions to soldiers in the war of the Rebellion.

UNAVAILABLE FUNDS.

The total amount of unavailable moneys carried in the balances of the accounts of this office on the dates mentioned was as follows:

June 30, 1878.....	\$29,622,241 27
June 30, 1879.....	29,552,284 91
The difference.....	69,956 36

arises as follows: \$47,097.65, which was stolen from the Treasury June 2, 1875, was transferred to the books of the Register of the Treasury, by authority of the First Comptroller, and to the proper personal debit, thus removing it from the cash account of the office. The remainder, \$22,858.71, was deposited March 19, 1879, by the Venango National Bank, Franklin, Pennsylvania, which failed in 1866, leaving the balance due from that bank at this time \$193,932.67.

No public money in the Treasury has become unavailable since March 4, 1877; on the contrary, by collections made since that time the unavailable funds have been reduced more than \$25,000.

It is contemplated at the proper time to submit for reference to Congress a bill to make permanent provision for the transfer of all unavailable items from the cash accounts of this office to the books of the Department, with a debit to the person, State, or bank properly chargeable therewith.

The act of March 3, 1837 (5 Statutes, 178), "to authorize the proper officers of the Treasury Department to credit the account of the Treasurer of the United States with the amount of unavailable funds standing to his debit on the books of the Treasury, to transfer the amount to the debit of banks and individuals indebted for the same, and to authorize the Secretary of the Treasury to compromise and settle said claims," thus disposed of such items as existed at that date, and was considered operative for some time thereafter, but a few years ago was decided by the Comptroller to be inoperative, and no action has been had thereunder recently.

RESUMPTION OF SPECIE PAYMENTS.

On December 31, 1860, the amount in the Treasury subject to draft was \$2,233,220.87 in gold and silver. Soon after that date the extraordinary expenses of the war of the rebellion commenced, which were at first met by the ordinary revenues of the Government, received in coin, supplemented by the issue of two-year Treasury notes, seven-thirties of 1861, the proceeds of the sixes of 1880 and 1881, and later by the issue of demand-notes. These loans were all on a coin basis, and amounted to \$578,000,000, the disbursement of which, with the current revenues, did not keep pace with the increasing indebtedness of the Government, and made no impression upon the accumulation of unsatisfied requisitions upon the Treasury until the issue of certificates of indebtedness in April, 1862, and of legal-tender notes under the act of February 25, 1862, the first obligations of the Government not issued on a coin basis. There is no date that can be named as the time when the Government definitely suspended specie payments. The first recorded quotation of gold at a premium is at 103, on January 13, 1862, though at that date it had been at a nominal premium for some time. No specific coin and currency accounts were opened by the Treasury until October 1, 1863.

Gold sales by the Government began July 1, 1866, and continued from time to time until December 31, 1878. The amount sold during that period was \$526,506,273.81, and the amount of premium derived therefrom was \$106,827,815.86, or an average rate of 20 $\frac{1}{2}$ per cent. The highest quotation of gold was 285, July 11, 1864, and the lowest, one sixty-fourth, December 30, 1878, disappearing at the resumption of specie payments, January 1, 1879, the date fixed by the third section of the act of January 14, 1875, for the redemption of United States notes in coin. This consummation necessitated the removal of all distinction between coin and currency in keeping and rendering the public accounts, and the requisite changes to that end were made in compliance with the following order of the Secretary of the Treasury, issued to the Treasurer on the 18th day of December, 1878:

The Department, in its circular of the 14th instant, having directed that, after the first of January next, no distinction be made between coin and notes in keeping, rendering, or settling the accounts of public officers, involving transactions which occur subsequently to that date, you will keep but one money of account of transactions which occur after January 1, 1879; and you will issue at once the necessary instructions to the several Sub-Treasury officers to enable them to render transcripts of your general accounts accordingly.

The necessary instructions were at once given to the various Assistant Treasurers of the United States, and with the close of business on the last day of 1878 all accounts of public moneys were closed and the balances carried to one new account. On the 2d of January, 1879, the redemption of United States notes in coin began at the Sub-Treasury in New York with so little disturbance, that more gold was received on that day and several days thereafter than was paid out, the total decrease of gold in the Treasury during that month being \$1,625,532.77. The amount of gold coin and bullion in the Treasury January 1 was \$135,382,639.42. At this date it is \$171,517,713.65, an increase of \$36,135,074.23 since resumption; while the redemptions of United States notes in gold have been \$11,256,678, as follows: January, 1879, \$1,571,725; February, \$909,249; March, \$952,766; April, \$699,773; May, \$1,339,883; June, \$2,503,302; July, \$954,800; August, \$981,400; September, \$603,485; October, \$740,295.

Since the order of the Secretary of the Treasury authorizing the receipt of United States notes for customs, which took effect January 1, 1879, there had been received to September 30, 1879, on that account, in legal-tender notes, at this office and the various sub-treasuries, \$92,137,927.

As will appear from the following table, the reserve in the Treasury for resumption purposes, being the excess of cash assets over demand liabilities, on December 31, 1878, was \$126,464,332.34, and on October 31, 1879, \$151,047,044.24:

Statement of the Coin Assets and Coin Liabilities of the Government at the close of business December 31, 1878.

COIN ASSETS.

Gold Coin in Treasury and Mints.....	\$128,575,950 73
Gold Bullion	6,806,688 69
Silver Bullion	9,439,461 25
Silver Profit Fund	300,000 00
Standard Silver Dollars	16,697,338 00
Coin Deposits with National Banks—proceeds of Bonds sold.....	52,584,179 48
Fractional Silver Coin.....	6,039,295 52
Total Coin Assets	\$220,442,913 67

COIN LIABILITIES.

Called Bonds not matured	\$35,996,100 00
Called Bonds matured	\$22,140,642 55
Less amount on hand.....	10,371,165 64
	11,769,476 91
Interest due.....	25,818,986 39
Less amount on hand.....	5,522,602 67
	20,296,383 72
Gold Certificates	21,580,700 00
Less amount on hand.....	391,420 00
	21,189,280 00
Silver Certificates	2,496,130 00
Less amount on hand.....	2,082,770 00
	413,360 00
Disbursing Officers' Balances	751,062 63
Outstanding Drafts and Checks	383,418 07
Sales of 4 per cents in excess of Bonds called.....	3,179,500 00
	93,978,581 33
Balance available for Resumption	126,464,332 34

Statement of the Assets and Liabilities of the Government, October 31, 1879.

ASSETS.		
Gold Coin in Treasury and Mints...	\$121,355,448 90	
Gold Bullion	50,356,464 75	
Silver Bullion	3,537,224 31	
Standard Silver Dollars.....	32,322,634 00	
Fractional Silver Coin.....	17,755 986 76	
		\$225,329,758 72
United States Notes		49,537,815 74
Total.....		\$274,867,574 46
DEMAND LIABILITIES.		
Called Bonds matured	\$24,271,506 95	
Less amount on hand.....	762 93	
		\$24,270,744 02
Interest due.....	9,704,299, 49	
Less amount on hand.....	277,706 29	
		9,426,593 20
Gold Certificates	14,501,000 00	
Less amount on hand.....	213,400 00	
		14,377,600 00
Silver Certificates	6,135,850 00	
Less amount on hand.....	4,531,480 00	
		1,604,370 00
Certificates of Deposit, (Act of June 8, 1872).....	22,510,000 00	
Less amount on hand.....	2,315,000 00	
		20,195,000 00
Disbursing Officers' Balances		18,337,397 01
Outstanding Drafts and Checks		5,020,764 96
Five per cent. Redemption Fund		15,742,887 52
Fund for redemption of Notes of National Banks— failed, liquidating, and reducing circulation.....		13,052,124 25
Post-Office Department Account		1,793,049 26
		123,820,530 22
Available for Resumption.....		151,047,044 24

REFUNDING THE DEBT.

The keeping of the public accounts with National Banks designated as depositaries of the United States to receive subscriptions to the four per cent. loan, consols of 1907, devolved upon this office. As a basis for these accounts every bank was required to render weekly transcripts of the Treasurer's account with it, in which all subscriptions were carried to his credit and all payments into the Treasury to his debit. Based upon these subscriptions, the Secretary of the Treasury issued his circulars calling in the five-twenty and ten-forty loans for redemption, interest ceasing thereon at the expiration of ninety days from the date of the notice. When received at the Department, the bonds are checked from the numerical registers of bonds issued, and transmitted to the Treasurer for computation of interest and disposition of the proceeds, either by credit in loan account or payment by check to the holders thereof.

The following is a statement by months of the bonds which matured under calls of the Department from the beginning of the fiscal year to the close of the recent refunding operations:

July, 1878	\$5,000,000
August, 1878.....	10,000,000
September, 1878.....	10,000,000
October, 1878	20,000,000
November, 1878	25,000,000
December, 1878	10,000,000
January, 1879.....	None.
February, 1879.....	10,000,000
March, 1879.....	16,000,000

stood at \$15,772,458.93, being less than the amount in the Treasury when the order of March 26 was issued.

The following statement is given to show the average amount of funds in the Treasury arising from four per cent. bonds and refunding certificates sold during the five months from April to August, during which months the heaviest settlements of loan accounts were made, and that that average was not at any time permitted to exceed the amount of those funds on hand at the date of the Secretary's order above mentioned, and that the immense settlements were made with such care that the Treasury did not withdraw money from the market.

The average amount of the funds mentioned was as follows:

April	\$9,901,812 48
May	9,289,536 84
June	14,066,759 46
July	3,368,254 00
August	11,545,465 68

During the month of September, after the refunding was over, the amount of deposits in the Treasury on bond account increased to an average daily balance of \$19,112,743.47, caused by the falling off in receipts of called bonds for redemption, and by the drafts made necessary in closing the depository accounts.

In compliance with the order of March 26, no drafts on loan account were drawn on the banks until April 16, and from that time until its modification in August, the drafts were regulated by the demand for money in redemption of bonds, except that after the maturity of the last call, July 23, drafts were made with a view to the speedy settlement of the accounts. With the account for the proceeds of four per cents. sent to London for sale under some arrangement made by one of the depository banks, this office had nothing to do, it being understood that settlement therefor should be made by called bonds or coupons delivered in London or New York, or by money deposited in New York, on or before the 1st of October.

The following is the form of draft made upon the depository banks in New York City, under the letter of March 26, for the deposit in the Treasury of proceeds of bonds sold:

Upon receipt hercof deposit to my credit with an Assistant Treasurer United States, or by your acceptance indorsed hereon, made payable at the clearing-house in favor of and delivered to the Assistant Treasurer United States, at New York, \$—— in coin, as a "transfer of deposits on account of subscriptions to the four per cent. loan of 1907." This draft must be paid in money and not in called bonds.

Drafts, except on final settlement, were made in loan account upon all debtor banks alike, for a small percentage of the balance due after deducting all bonds in possession of the Department for credit in account, and were made only to cover the amount necessary to make the cash account good for disbursements already made in redemption of called bonds. Hence, called bonds were not received in payment of drafts, but were immediately, upon receipt, before redemption, considered as a credit to the bank owning them, in striking its balance.

The final settlement of the loan accounts was made under the following order of the Secretary, transmitted to this office August 13, 1879:

With a view to closing as soon as practicable the accounts of the Department with depository banks on loan account without unnecessary disturbance of the money market or the withdrawal of legal-tenders from current business, you will please receive from such depositories in payment called bonds to be credited when passed through the Loan Division. You will require from such depositories sufficient money in addition to the called bonds credited to meet all demands for the payment of called bonds, and so as to insure the withdrawal of all deposits on loan account on or before the 1st of October next. The letter of the Department of March 26 is modified accordingly.

The following statement shows the aggregate amount of drafts drawn each day on loan account upon depositary banks under the above order and that of March 26 :

April 16	\$3,976,707 77	August 27	\$542,000 00
April 23	4,999,209 52	August 28	635,000 00
May 1	4,806,112 60	August 29	548,000 00
May 5	4,935,971 32	August 30	500,000 00
May 7	4,596,495 96	September 1	500,000 00
May 9	5,020,752 07	September 2	505,000 00
May 12	10,001,000 00	September 3	500,000 00
May 13	10,145,000 00	September 4	649,000 00
June 25	10,017,036 95	September 5	500,000 00
July 2	10,002,118 60	September 6	500,000 00
July 9	10,004,535 56	September 7	500,000 00
July 18	10,002,528 15	September 9	552,000 00
July 22	10,003,820 26	September 10	530,000 00
July 24	15,204,427 21	September 11	530,000 00
July 26	3,000,000 00	September 12	530,000 00
July 28	10,009,783 10	September 13	517,000 00
July 30	10,127,873 93	September 15	515,000 00
August 1	10,391,628 07	September 16	515,000 00
August 4	5,190,828 18	September 17	490,000 00
August 6	8,728,697 07	September 18	486,000 00
August 8	4,945,170 05	September 19	486,000 00
August 11	3,750,000 00	September 20	466,000 00
August 19	752,000 00	September 22	466,000 00
August 20	807,000 00	September 23	466,000 00
August 21	500,000 00	September 24	419,000 00
August 22	500,000 00	September 25	422,000 00
August 23	500,000 00	September 26	357,774 05
August 25	500,000 00		
August 26	680,000 00	Total	187,815,450 42

The above amounts are exclusive of proceeds of called bonds redeemed and credited in account. No drafts were drawn from May 13 to June 25, because the sales of refunding certificates during that period were ample, with the ordinary receipts from four per cents., to cover redemptions of called bonds. The following statement shows that the total amount of called bonds presented for redemption from January 1 to November 1, 1879, was \$568,333,700, and that of the proceeds \$264,152,046.49 was paid by the Treasurer's checks, and \$315,513,622.30 credited to the banks in loan account. Of the total amount paid by check at least \$255,000,000 was paid in United States notes, and the whole sum would have been so paid but for the fact that the necessities of the Treasury have required payment to be made in coin at the New York office, though coin has not been demanded therefor in any case.

Month.	Principal.	Proceeds.	Paid by Treasurer's checks.	By credits in loan account to depositary banks.
January	\$16,813,150 00	\$17,087,586 42	\$1,236,358 60	\$12,251,227 83
February	16,006,150 00	17,243,850 52	6,564,395 14	10,700,525 38
March	49,378,200 00	50,239,574 07	8,851,616 51	41,387,957 56
April	84,430,700 00	85,918,141 77	26,461,823 68	59,456,321 11
May	113,258,800 00	115,748,871 96	18,171,585 96	67,577,286 00
June	107,806,900 00	110,248,175 85	30,919,591 70	70,328,584 08
July	123,001,050 00	126,405,698 78	92,742,841 40	33,752,827 38
August	37,595,400 00	38,300,976 44	25,093,994 88	13,206,981 56
September	11,463,700 00	11,670,045 51	6,396,638 78	5,312,406 73
October	6,593,650 00	6,703,794 47	5,173,280 77	1,530,504 70
	568,333,700 00	579,005,608 79	264,152,046 49	315,513,622 30

REFUNDING CERTIFICATES.

The act of February 26, 1879, authorized the issue, in exchange for lawful money, of certificates of the denomination of ten dollars, bearing

four per cent. annual interest, convertible at any time into four per cent. bonds. They were of two descriptions, those payable to bearer, issued by the Treasurer, amounting to \$39,954,250; and registered certificates with the name of the holder inscribed therein, issued by the Register, amounting to \$58,500; making in all, \$40,012,750, for which there was deposited in the Treasury, including accrued interest, \$40,209,139.71.

There were designated for the purpose of disposing of the certificates one hundred and eighty-four national banks, of which but seventy-six qualified by depositing collateral security with the Treasurer. Through these \$1,197,670 were sold. Seven hundred and ninety-nine government officers were designated as depositaries under section 3639, Revised Statutes, but only five hundred and nine qualified by filing bonds. Through these \$28,569,200 were sold, and by this office and the nine sub-treasuries \$10,245,880 were sold. The largest sale was by the depositary at New York City, amounting to \$3,229,590, and the smallest \$120, by the depositary at Springdale, Pa. The first certificates were sold April 1, 1879, from which date they bore interest, and the sales continued slowly until the 16th of that month, when, by reason of the premium upon four per cent. bonds, into which they are convertible, there began to be an increased demand for the certificates for speculation; whereupon it was ordered by the Department that but ten certificates should be sold to any person at one time. Speculation continued, inducing the hiring of parties to occupy places in the line of buyers at points where sales were being made. The largest daily sale reported was on May 24, amounting to \$3,340,860. The deliveries of certificates from the Printing Bureau ceased with that month, and the last shipment to a depositary was made on June 2.

The following table shows the amount of refunding certificates sold in the District of Columbia, and in the several States and Territories:

Alabama	\$196,250	Minnesota	\$480,000
Arizona	1,000	Mississippi	35,000
Arkansas	12,000	Missouri	1,829,900
California	116,800	Nebraska	76,120
Colorado	6,000	New Hampshire	251,000
Connecticut	1,290,000	New Jersey	2,958,000
Dakota	5,000	New York	7,017,530
Delaware	25,000	North Carolina	103,000
District of Columbia	5,476,600	Ohio	2,047,870
Georgia	157,290	Pennsylvania	5,329,320
Idaho	5,000	Rhode Island	272,000
Illinois	2,722,750	South Carolina	18,000
Indiana	498,700	Tennessee	42,000
Iowa	94,500	Texas	37,000
Kansas	191,010	Vermont	610,000
Kentucky	602,000	Virginia	497,500
Louisiana	135,000	West Virginia	114,000
Maine	402,000	Wisconsin	391,530
Maryland	2,882,000		
Massachusetts	2,973,010		
Michigan	111,070	Total	40,012,750

The object of this loan was to furnish an investment for the small savings of the people. The rapid sales induced by the unexpected appreciation of the four per cent. bonds exhausted the amount of certificates set apart for popular subscription so quickly, that the original purpose was almost wholly defeated. The conversion of the certificates into bonds commenced on June 19, and up to this date \$37,148,950 of the amount issued has been presented for conversion. The total number of cases of certificates presented for conversion is 6,359, the average amount of each case being about \$5,800. The number of \$50 cases deposited is 370; the number of \$100 cases is 940; the number from \$100 to \$1,000, inclusive, is 2,518; the number over \$1,000 is 2,531, and the largest amount in

any one case was \$820,000. The amount outstanding at this time is \$3,863,800.

UNITED STATES NOTES.

The following table shows the denominations of United States notes in circulation at the close of the fiscal years 1877, 1878, and 1879. The cents appearing therein arise from the redemption and partial payment, under the rules of the Department, of mutilated notes:

The reduction of \$13,083,316 circulation during the year 1878 was due to the operation of the resumption act, which provided for the redemption of United States notes in excess of three hundred millions to the amount of eighty per cent. of the national-bank notes issued. This retirement of notes ceased under the provisions of the act of Congress of May 31, 1878, and no reduction in the volume of outstanding notes has been made since that time. By virtue of the authority vested in the Secretary of the Treasury by section 3571, Revised Statutes, notes of the denominations of \$5,000 and \$10,000 have been engraved, printed, and issued during the past year to the amount of \$10,000,000, for the purpose of taking the place of gold certificates, the issue of which was discontinued December 1, 1878, as a preliminary step toward resumption.

There has been a decrease in the amount outstanding of all denominations of notes under one hundred dollars and an increase of all larger denominations. This has taken place, not by any action of the Department, but because during a greater part of the year small notes have been sent in for redemption by the public and large notes requested in their place. The demand, however, for notes less than fifty dollars has been so great since the close of the fiscal year that it has been impossible to supply it fully. To an unusual fall demand for the movement of Western crops has been added an unexpected request for small notes to be used on account of the cotton crop, heretofore paid for in coin.

The following statement, giving the increase and decrease of the various denominations of United States notes outstanding, shows that from July 1 to date there has been issued of notes of the denomination of twenty dollars and less \$24,855,595, and an equal amount redeemed and canceled of notes of the denomination of fifty dollars and above:

Denomination.	Increase since July 1, 1879.	Denomination.	Decrease since July 1, 1879.
1s.....	\$1, 110, 322	50s.....	\$870, 295
2s.....	845, 711	100s.....	610, 300
5s.....	7, 503, 920	500s.....	10, 123, 000
10s.....	7, 072, 750	1, 000s.....	12, 242, 000
20s.....	8, 322, 686	5, 000s.....	750, 000
		10, 000s.....	400, 000

But one new counterfeit United States note has made its appearance during the year. It is of the denomination of five dollars, series of 1875, and is supposed to have been engraved in Canada and first put in circulation in Buffalo, N. Y. The paper is a poor imitation, an attempt being made to give it the appearance of Government paper by printing thereon lines resembling the localized fiber. There have also appeared at various times imitations of a twenty-dollar note drawn with a pen, but of such a character as to deceive no one familiar with money.

The condition of the outstanding United States note circulation is becoming cause for complaint. Prior to 1876 such appropriations were made by Congress that the transportation charges upon all notes sent in for redemption and the returns therefor were paid by the Department. Under that system about twenty-five per cent. of the circulation was redeemed annually, thus virtually renewing it every four years. Under the present system, which obliges holders of notes to return them for redemption at their own expense for transportation, the notes in circulation will apparently be redeemed once in six years, though, in fact, by reason of the expense attending the remittance, they will not be returned, until absolutely unfit for circulation, from points without the territory covered by the present Government express contract. The transportation charges so vary with the distance, that the burden and inconvenience of the present system are very unequally distributed.

Under the present system, also, mutilated notes are subjected to a proportionate deduction by tenths for missing parts, and the tax upon the community on that account, when the circulation is in bad condition, is quite a serious item, amounting to \$9,897 during the past year. The detection of counterfeits is also rendered difficult when the bad condition of genuine notes renders likeness thereto more easily attainable in the spurious; hence counterfeiters usually select the older issues for their purpose.

To the requirement that the holder should pay the transportation charges is due to a great extent the reduction in the circulation of small notes. The banks send in most of the money redeemed, composed largely of small notes, which are subjected to the most use and wear in circulation, and generally take in return large notes, which can be handled with the least expense. The people who wish small amounts of small notes cannot afford to send for them, and hence the volume of such notes in circulation is continually diminishing. This, however, aids the distribution of standard silver dollars, by which the falling off in ones and twos has been nearly counterbalanced.

The following table shows the issue and redemption of United States notes by denominations during the fiscal years 1878 and 1879 and the gradual decrease of small notes in circulation:

Denomination.	1878.		1879.	
	Issued.	Redeemed.	Issued.	Redeemed.
1c	\$7,002,351	\$11,792,775	\$8,593,133	\$8,223,926 40
2c	8,124,000	10,746,878	8,492,000	8,710,285 00
5c	17,250,000	10,171,867	11,600,000	11,622,443 50
10c	11,350,000	12,761,000	8,290,000	10,190,002 00
20c	9,200,000	9,046,354	7,400,000	9,640,756 00
50c	3,200,000	6,297,030	2,400,000	4,039,340 00
100c	6,800,000	4,194,100	3,067,700	4,503,890 00
500c	4,417,000	4,421,000	1,650,000	3,938,000 00
1000c	2,000,000	3,973,000	3,900,000	2,042,000 00
5,000c			4,000,000	5,000 00
10,000c			2,910,000	50,000 00
Total	67,373,351	80,350,267	64,107,833	64,107,823 90

It has heretofore been held to be the duty of the Government to keep its circulating notes in good condition; in fact, for the first sixteen years

of the present paper money, notes in any condition, perfect or worn, were sent in and new notes returned without expense to the holder for transportation. In this way this office assorted a great deal of money for the banks of the country, many regularly sending their daily receipts to the Treasury to receive within a few hours new notes of any desired denominations in exchange. That arrangement was too liberal and expensive, involving the destruction of too many notes fit for circulation, for all redeemed were destroyed. Notes unfit for circulation only should be received at the expense of the Department, and packages containing others should be subjected to deduction of transportation charges at Government contract rates as at present.

By reason of some decrease in the production of United States notes during the past fiscal year the experiment of assorting notes received for redemption was tried for the first time by this office, and the result has been that out of a total redemption of \$64,107,833 during the year, only \$686,136, or about one per cent. of the face value, and less than eight-tenths of one per cent. of the number of notes redeemed, was obtained in notes fit for reissue. This result bears out the previous judgment of the office that it does not pay to assort notes received for redemption, especially when consignors pay the express charges thereon. It may possibly be more profitable to assort when notes upon the new distinctive paper recently adopted are paid out, as that paper will be of better quality and more durable than the localized-fibre paper now in use.

STANDARD SILVER DOLLARS.

The total coinage of standard silver dollars under the act of February 23, 1873, is \$45,206,200, of which amount \$32,203,373 is in the mints and treasury offices and \$13,002,842 is in circulation at this date, being twenty-eight and three-fourths per cent. of the total coinage as against \$4,922,623 in circulation at the same date last year, which was twenty-six and nine-tenths per cent. of \$18,282,500 coined to that time. The methods of the Department for the rapid distribution of this coin have been the best that could be devised, and whether the above figures show that the present rate of coinage is about seventy-five per cent. in excess of the ability of the Treasury to distribute the coins must be left to time to determine.

The following table shows the amount coined, on hand, and outstanding at the close of each month since the coinage commenced:

Month.	Monthly coinage.	Coined to the end of the month.	Monthly balance on hand.	Net distribution during the month.	Outstanding.
1873.					
March.....	\$1,001,500	\$1,001,500	\$510,561	\$190,039	\$190,039
April.....	2,470,000	3,471,500	3,169,081	110,880	301,819
May.....	3,615,000	6,486,500	5,950,451	231,200	536,049
June.....	2,087,000	8,573,500	7,718,357	319,091	855,143
July.....	1,847,000	10,420,500	9,550,236	15,121	870,264
August.....	3,028,000	13,448,500	11,292,849	1,265,327	2,135,651
September.....	2,764,000	16,212,500	12,155,205	1,991,644	4,057,295
October.....	2,070,000	18,282,500	13,359,877	827,328	4,922,623
November.....	2,150,050	20,432,550	14,843,219	672,768	5,595,331
December.....	2,057,000	22,489,550	16,761,829	1,555,000	5,790,721
1872.					
January.....	2,660,200	21,555,750	18,625,223	130,803	5,930,527
February.....	2,132,000	26,687,750	20,619,181	708,642	6,638,569
March.....	2,087,200	28,774,950	21,799,206	237,175	6,975,744
April.....	2,381,000	31,155,950	23,069,647	181,159	7,156,903
May.....	2,330,000	33,485,950	23,386,154	.....	7,099,796
June.....	2,315,050	35,801,000	23,353,580	257,528	7,442,411
July.....	1,650,000	37,451,000	23,317,201	631,398	8,103,799
August.....	2,787,050	40,238,050	30,962,254	1,171,907	9,275,796
September.....	2,396,050	42,634,100	31,866,774	1,551,530	10,827,326
October.....	2,572,100	45,206,200	32,203,373	2,175,516	13,002,842

Their introduction has been as rapid as could be expected of a standard of money which, though theoretically identical with the gold standard, falls more than a tenth short in intrinsic value, as measured in the markets of the world, even under the very favorable circumstances of the withdrawal by the Government from the market of at least thirteen hundred tons of silver bullion. The standard silver dollar has been compelled to make its way against trade dollars and Mexican dollars of greater intrinsic value obtainable at a discount from their face value, and against the glut of fractional silver which, to the extent of some thirty millions of dollars, had already been put in circulation under the act of 1876, in addition to large amounts of the old fractional silver coinage called out from hoards by the resumption of specie payments, as well as against the settled habit of handling paper money acquired by the people of the country through seventeen years of suspension of specie payments. But for the free transportation of this coin, afforded by the Mint from the silver-profit fund, and the very liberal regulations approved by the head of the Department, it would be impossible to place and keep such an amount in circulation.

It is too early yet to gather the judgment of the country upon this coin as a circulating medium. The laboring men and common people take it willingly, because in small amounts and retail transactions it burdens them little. For large payments it is avoided, and vaults built since the suspension of specie payments are generally unsuited to the bulk and weight of silver coin, so that few banks and bankers take it on deposit or for their reserves. It takes the place of one and two dollar notes as they go out of circulation, and absorbs from the market the surplus silver product of the country until the time when, remonetized by the nation, it shall become the money of the world, available for foreign exchange. In that case, in lieu of sixty millions of dollars in gold received in settlement of balances, the country might get that amount in silver coin or bars. If the course of foreign trade has turned permanently in our favor, bi-metallism has a new interest to us as a silver-producing nation, in our condition so suddenly changed, relatively to foreign nations, from debtor to creditor; and the international double standard, when set up, ought to be so adjusted that a thousand dollars in silver or in gold will be equally desirable for payment of that amount across the street or across the world, and the difference between the two metals, in bulk and weight in proportion to value, be so counterbalanced that it shall be absolutely immaterial in every particular to debtor, creditor, consignor, common carrier, and consignee whether silver or gold is paid, sent, carried, or received. If such adjustment can be made, the resulting double standard will be perfect, but any element of preference in either metal not neutralized will disparage the other, and lead to fluctuation either in value or circulation. The recent rapid appreciation of silver, however, bids fair to solve the silver problem for this country, and there are indications that, if the present influences continue, it may attain nearly to its former relation to gold, or at least approach to a parity therewith.

The demand for silver dollars has increased during the past few months in the general desire for small denominations of money. The distribution of this coin in October, 1879, was \$2,175,516, which exceeded that of any other month. The month of May, 1879, was the only month which showed a decrease in the amount outstanding, more having been returned to the Treasury in that month by \$57,107 than was paid out.

SILVER CERTIFICATES.

The total amount of silver certificates issued under the act of Feb-

often as certificates returned, after being paid out on Mint checks, they could again be placed to the credit of the Mint and paid out and returned. This shows that silver certificates may be retained for checks payable in standard silver dollars, and without a deposit of the dollars with the officer paying out the certificates. From this explanation it will appear that the following statement made in the Senate on the 10th of last January in regard to the report of this office on the standard silver dollar was uttered under a misapprehension of the facts:

The act of February 24, 1875, which makes silver dollars a legal tender for all demands, public and private, by the third section thereof authorizes any holder of not less than ten dollars to deposit it with the Treasurer or any Assistant Treasurer of the United States and receive a certificate, upon the presentation of which the holder is entitled to the amount of coin deposited, and custom-house officers are ordered to receive these certificates precisely as they would coin, the amount they represent being already in the Treasury. The customs dues are paid in coin, not in certificates; these merely attest the fact that the coin is in the Treasury, and it becomes the property of the United States, being paid for customs dues precisely as if it was counted dollar by dollar into the hands of the revenue collector, who is charged with that amount of money as soon as the transaction is closed. The merchant who pays, say, \$1,000, to pass his goods through the custom-house, may pay it in one hundred certificates of \$10 each, which he may have obtained from one hundred different people; the coin they represent becomes the absolute property of the United States, and is at once subject to the uses to which coin received for customs dues is by law appropriated, and cannot be otherwise legally used. Yet, in the face of these facts, the Secretary adopts and sends to the Senate as his answer the following nonsense signed by the Treasurer. After stating that \$1,500,000 would be a liberal estimate of the coin actually paid at the custom-houses since July, 1874, he says:

"The above figures do not, however, cover silver certificates received on account of customs, principally at the New York office, which amounted during the current fiscal year to \$11,200,000. This amount exceeds the total of silver certificates issued, which is accounted for by the fact that when received for public dues silver certificates have been again paid out; the greater portion of the above \$11,200,000 is represented by only \$6,717,000, in San Francisco silver certificates received for customs in New York, all, or a portion, being again paid out by that office and again received for customs. Silver certificates cannot be paid for interest, their issue being authorized only upon the deposit of standard silver dollars."

There is as much absurdity in that paragraph as could be well crowded into as many words. He says "silver certificates cannot be paid for interest." Admit it; they are not a legal tender to any private person for anything, but the \$11,200,000 in silver coin which these certificates showed had become the absolute property of the United States, and already deposited in the Treasury, not only could be paid for interest, but was by law and specific permanent appropriation act apart and dedicated first of all to be applied for that purpose, and is a legal tender for all purposes. Again he says, and that is true, "These certificates could only be issued upon the deposit (in the Treasury) of standard silver dollars." Yet he says the \$11,200,000 "exceeds the total of silver certificates issued" by nearly \$5,000,000. I hope the Finance Committee will cause careful inquiry to be made, and advise the Senate by what authority and under what law that state of things is brought about. The Treasurer says the silver certificates received for customs in New York are again "paid out by that office and again received for customs." How they are paid out except on the deposit of an equal amount of silver coin, and how \$11,200,000 of them have reached the custom-house unless that amount of coin has reached the Treasury, is something the Senate ought to know.

It was not necessary that the coin should at once reach the Treasury, though it was absolutely essential that the bullion, for which the checks were given and the certificates paid, should have reached the Mint.

Silver certificates would take the same rapid circuit at San Francisco as at New York, but for the fact that the revenues collected at that point are not always of such volume as to absorb the disbursements of certificates for bullion, and for the further reason that a profit can be made by mailing them to New York to make exchange. As it is, however, they find their way to the New York office, where they are either retained or, as was formerly the case, canceled, the expense and risk being too great to

warrant their transportation back to the office of issue. This fact accounts for the excess of issues at San Francisco. Washington certificates, also, speedily reach the New York office, to be there reissued.

The certificates have gone into general circulation but little, and they will not, so long as for a small discount of from a thirty-second to a sixty-fourth of one per cent., they can be got rid of through brokers who dispose of them for use in payment of dues to the Government. They circulate quite freely in this city, where the disbursements of standard silver dollars are heavy and the Government receipts, which otherwise might absorb them, are light. With the increased payments of silver dollars made necessary by the decrease in the note balance the volume of certificates may increase, which result will be hastened when the New York Clearing House shall accept them in payment of balances.

The following table shows the amount of silver certificates issued, redeemed, and outstanding from the date of the authorizing act to the end of the fiscal year. The outstanding differs from that of the public debt statement for the same date, by the amount issued and reported too late for entry therein:

Denomination.	Issued.		Redeemed.		Outstanding June 30, 1879.
	During fiscal year.	To June 30, 1879.	During fiscal year.	To June 30, 1879.	
\$10	\$43,780	\$167,000	\$3,170	\$3,170	\$163,830
\$20	85,760	96,000	500	500	85,420
\$50	131,750	145,000	.....	.....	145,000
\$100	301,300	421,000	5,300	5,300	475,700
\$500	2,000,000	2,268,000	1,768,000	1,768,000	300,000
\$1,000	6,587,000	7,848,000	6,683,000	6,683,000	1,160,000
	9,149,590	11,000,000	8,460,050	8,460,050	2,539,950

FRACTIONAL CURRENCY AND FRACTIONAL SILVER COIN.

The issue of fractional silver and the redemption of fractional currency have practically ceased. Under the operation of the law of June 9, 1879, providing for the exchange of fractional silver for lawful money, \$10,423,178 has been taken out of circulation by the Treasury. A demand for it has, however, sprung up, and, under reduced transportation charges and the improved condition of business, it is being reissued from this office and from the various sub-treasuries. The nominal amount of the recent coinage outstanding September 30, was \$26,101,032.53. This, however, is increased by a large amount of the old coinage which has found its way into circulation since 1876.

The coinage of fractional silver at the Mint ceased in February, 1878, and none has been coined since. The total amount issued under the act of April 17, 1876, was \$42,974,931, of which \$16,873,898.47 was in the vaults of the Treasury September 30, 1879.

At the date of the last-mentioned act the total amount of paper fractional currency in circulation was \$41,508,737.48, which has been decreased as shown by the following table in the sum of \$25,797,773.24, leaving the outstanding at \$15,710,964.24, with an average monthly redemption at this time of only \$30,000, the total redemption for the fiscal year amounting to but \$705,158.67.

Redemption of fractional currency.

Month.	Fractional currency out-standing at the close of each month.	Fractional currency re-deemed during each month.	Total redeemed to the end of each month.
1876.			
April.....	39 48	\$648, 698 00	.....
May.....	74 20	8, 500, 565 18	\$4, 149, 283 18
June.....	95 39	2, 912, 878 91	7, 062, 142 09
July.....	90 39	1, 543, 715 00	8, 605, 857 09
August.....	11 45	1, 547, 568 94	10, 153, 426 03
September.....	15 62	1, 496, 895 83	11, 650, 321 86
October.....	78 06	1, 302, 937 57	12, 953, 259 43
November.....	98 98	1, 146, 969 07	14, 100, 228 50
December.....	96 45	1, 060, 302 53	15, 160, 531 03
1877.			
January.....	25, 424, 567 14	923, 639 31	16, 084, 170 34
February.....	24, 434, 420 35	990, 146 79	17, 074, 317 13
March.....	23, 440, 512 08	993, 908 27	18, 068, 225 40
April.....	22, 186, 575 52	1, 253, 936 56	19, 322, 161 96
May.....	21, 206, 930 23	979, 645 29	20, 301, 807 25
June.....	20, 408, 137 34	803, 792 89	21, 105, 600 14
July.....	19, 784, 385 89	618, 801 45	21, 724, 401 59
August.....	19, 172, 114 39	612, 221 50	22, 336, 623 09
September.....	18, 786, 642 27	385, 473 12	22, 722, 095 21
October.....	18, 352, 574 68	434, 067 61	23, 156, 162 82
November.....	18, 043, 020 52	809, 554 14	23, 465, 716 96
December.....	17, 764, 106 90	278, 911 62	23, 744, 628 58
1878.			
January.....	17, 471, 919 72	292, 189 18	24, 036, 817 76
February.....	17, 190, 698 14	281, 221 52	24, 318, 039 28
March.....	16, 950, 116 62	240, 582 52	24, 558, 621 80
April.....	16, 805, 414 52	144, 701 10	24, 703, 322 90
May.....	16, 658, 698 58	146, 715 94	24, 850, 038 84
June.....	16, 547, 768 77	110, 929 81	24, 960, 968 65
July.....	16, 455, 588 17	92, 170 60	25, 053, 139 25
August.....	16, 351, 728 10	103, 870 07	25, 157, 009 32
September.....	16, 297, 429 58	54, 296 52	25, 211, 307 84
October.....	16, 211, 198 19	60, 231 39	25, 271, 539 23
November.....	16, 150, 347 22	60, 850 97	25, 332, 390 20
December.....	16, 108, 158 95	42, 188 27	25, 400, 678 53
1879.			
January.....	\$16, 027, 500 06	\$60, 658 89	\$25, 461, 237 42
February.....	15, 986, 416 67	41, 083 39	25, 522, 320 81
March.....	15, 925, 006 47	60, 750 20	25, 583, 071 01
April.....	15, 913, 013 85	12, 662 62	25, 595, 733 63
May.....	15, 874, 781 45	38, 232 40	25, 633, 966 03
June.....	15, 842, 610 11	82, 171 84	25, 686, 127 37
July.....	15, 814, 827 56	27, 782 55	25, 693, 909 92
August.....	15, 762, 069 29	52, 758 27	25, 746, 668 19
September.....	15, 747, 507 59	14, 601 70	25, 761, 270 89
October.....	15, 710, 984 24	36, 543 36	25, 797, 773 24

Of the outstanding at the close of the fiscal year, \$1,951,278.69 was in three and five cent notes, none of which denominations have been issued since 1866; \$5,427,538.64 was in ten and fifteen cent notes, and \$8,495,792.78 was in twenty-five and fifty cent notes, less \$32,000 in unknown denominations, destroyed in the Chicago fire.

MINOR COIN.

The minor coin in the vaults of the various offices amounts to \$1,524,700.57, having increased to that sum from \$157,000 on September 30, 1876, \$870,000 in 1877, and \$1,410,898.50 in 1878. There is, however, a demand for five-cent nickel coin, which can be supplied from the stock on hand. There is also a demand for one-cent bronze pieces necessitating coinage, metal for which is furnished by recoinage the two-cent bronze pieces, of which there is an excess over the demand.

Under the pressure of the standard silver dollar coinage the Philadelphia Mint has been unable to supply the demand for one-cent bronze pieces.

Minor coins on hand September 30, 1879, by denominations.

Office by which held.	Five-cent nickel.	Three-cent nickel.	Two-cent bronze.	One-cent bronze, copper-nickel, and copper.	Mixed.	Total.
Washington	\$1,433 00	\$1,050 00	\$200 00	\$377 00	\$403 98	\$3,463 98
Baltimore	8,274 00	232 95	70 02	120 59	.....	8,697 56
New York	136,243 00	14,700 00	270 00	14,600 00	.....	165,813 00
Philadelphia	918,573 00	86,280 00	.....	30,309 00	.....	1,035,253 00
Boston	21,030 00	6,051 00	68 00	1,543 04	76 00	28,768 04
Cincinnati	9,571 00	2,500 00	40 50	243 15	.....	12,354 65
Chicago	20,270 00	5,270 00	100 00	60 00	68	25,700 68
Saint Louis	1,500 00	.....	.....	.....	4,500 12	6,000 12
New Orleans	2,800 00	1,190 00	500 00	1,430 00	.....	5,920 00
San Francisco	4,300 00	600 00	200 00	100 00	.....	5,200 00
Tucson .....	.....	.....	.....	.....	550 38	550 38
Mint U. S., Philadel- phia	60,258 95	50,553 39	2,502 60	113,665 22	.....	226,980 16
Total	1,184,252 95	168,427 34	3,951 12	162,538 00	5,531 16	1,524,700 57

REDEMPTION OF NATIONAL-BANK NOTES.

The order issued by direction of the Secretary of the Treasury, requiring the express charges on national-bank notes forwarded for redemption on and after October 1, 1878, to be defrayed by the senders, caused a large decrease in the redemptions of bank notes during the last fiscal year. The amount received for redemption was \$154,768,912.96 as against \$210,490,437.56 received during the preceding year, a falling off of more than 26 per cent. The amount redeemed, assorted, and charged to the banks of issue was \$152,455,000, of which \$112,293,000 was fit, and \$40,162,000 unfit, for circulation. During the preceding year \$203,416,400 was assorted, of which \$151,786,600 was fit, and \$51,629,800 unfit, for circulation; the decrease in fit notes in the last year being \$39,493,600, and in unfit notes \$11,467,800, or a total falling off of \$50,961,400. The number of notes assorted was 18,295,558 as compared with 22,927,842 assorted during the fiscal year 1878. The following table shows the number and amount of national-bank notes redeemed and assorted during each of the five fiscal years which have elapsed since the establishment of the present system of redemption:

Fiscal year.	Number of notes as- sorted.	Amount of notes as- sorted.
1875	17,842,310	\$130,322,945
1876	19,111,838	176,121,855
1877	22,745,548	214,361,300
1878	22,927,842	203,416,400
1879	18,295,558	152,455,000
Total	100,923,096	876,677,500

Of the above, 51,133,882 notes, representing \$528,614,500, were fit for circulation and were returned to the banks which issued them, and 49,789,214 notes, amounting to \$348,063,000, being unfit for circulation, were destroyed and new notes issued in their stead. In addition to the above there have been redeemed notes of national banks which have

failed, gone into voluntary liquidation, or deposited United States notes for the reduction of their circulation, as follows:

In 1875.....	\$6,579,217
In 1876.....	24,927,900
In 1877.....	24,439,700
In 1878.....	11,852,100
In 1879.....	8,281,550
Total.....	76,080,467

These notes are not properly redeemable by the force employed in handling the national currency, but, being received for redemption, mixed with notes of other banks, the only practicable course was to redeem them and afterwards sort them out and turn them over to the branch by which they are redeemable. As no assessment could be made upon the banks by which they were issued, and there was no means of obtaining reimbursement from the United States for the expense of handling them, the cost has necessarily been included in the assessment on the other banks.

The charges for transportation, under the order of October 1, 1878, show a large decrease, being only \$98,298.75 against \$173,420.60 for the fiscal year 1878. This amount includes the charges incurred during the entire year on national bank notes received from assistant treasurers for redemption; on United States notes returned for bank notes redeemed; and on assorted bank notes fit for circulation forwarded to the banks of issue, as well as those for the transportation to Washington of all bank notes forwarded for redemption prior to October 1, 1878. The average cost for the charges for transportation when assessed on the entire amount redeemed and assorted, as required by the law, was less than 64½ cents for each \$1,000. The average cost for the preceding year was 85½ cents for each \$1,000.

The expenses of assorting do not show a like reduction for the reason that it was impracticable at once to reduce the force proportionately to the falling off in the work. It was for some time doubtful what the effect of the order in regard to express charges would be, and it was not deemed prudent or just to dispense with the services of tried and expert employes until it had been ascertained what force would be permanently needed. During the last half of the fiscal year, however, the force was considerably reduced, and a saving was made of \$5,447.70 in the amount appropriated for the salaries of the force employed in this office. The number of employes authorized in the appropriation for the current fiscal year was reduced at the Treasurer's instance from 99 to 84. It having been found that even this number was larger than the work required, the force has since been reduced to 62 persons, whose annual salaries amount to \$76,552. This is exclusive of 15 persons employed in the office of the Comptroller of the Currency at an annual expense of \$22,220, which is also included in the assessment on the banks. The total "costs for assorting" were \$142,651.20, which, when assessed on 18,295,558 notes assorted, made an average rate of \$7.79⁷/₁₀ for each 1,000 notes, as compared with \$6.30½ for the preceding year.

The total expenses of redemption were \$240,949.95, or about \$1.58 for each \$1,000 assorted. The total bank circulation at the close of the fiscal year was \$315,414,334, and the cost of redemption was, therefore, less than one-thirteenth of 1 per cent. on the circulation, or an average of \$68.75 for banks of \$90,000 circulation. The aggregate expenses have steadily decreased during the last three years, being \$365,193.31 for the

fiscal year 1876; \$357,066.10 for 1877; \$317,942.48 for 1878, and, as above stated, \$240,940.95 for 1879, which is less than two-thirds of the cost for 1876.

Although the decrease of redemptions during the last year has been chiefly in notes fit for circulation, the redemptions of notes unfit for circulation show a considerable falling off. The amount of notes unfit for circulation redeemed and assorted during the year ending September 30, 1879, was \$36,899,500, as compared with \$48,492,300 for the year ending September 30, 1878, a decrease of nearly 25 per cent. This falling off is ascribable to the order requiring the holders of the bank-notes to defray the express charges thereon when forwarded for redemption. There is little doubt that this change in the regulations has resulted in a decided deterioration of the bank circulation, and that its condition is gradually growing worse. A large share of the notes now redeemed are extremely dirty and ragged, and ought long ago to have been replaced with new notes. It is therefore recommended that the regulations governing the redemption of national-bank notes be so amended that the holders of notes clearly unfit for circulation may forward them for redemption at the expense of the banks of issue, the express charges thereon to be paid out of the 5 per cent. fund, and afterward assessed upon the several banks of issue in proportion to their circulation redeemed.

Whatever difference of opinion may exist as to the justice of requiring the banks to defray the expense of transporting to the redemption office notes of their issue which are still fit to circulate, there can be no question that they may justly be required to bear the expense of replacing notes which are so dirty or ragged as to be unfit for use. This burden would be no greater than that borne by the banks prior to the establishment of the present system of redemption. Whatever soiled or defaced notes of their issue were redeemed at their own counters, or by the banks designated as their redemption agents in the principal cities, they were required to forward to Washington at their own expense for replacement with new notes. To require them to defray the charges on such notes would only be to relegate them to the position which they occupied prior to the passage of the act of June 20, 1874. The principle should be frankly recognized by both the Government and the banks that the issuers of the circulation of the country are bound to maintain it in good condition—an obligation which can be fulfilled only by providing the holder of soiled and mutilated notes with the means of converting them into clean notes promptly and without expense.

The method of redeeming and making payment for bank notes has been in no wise affected by the resumption of specie payments. The act of June 20, 1874, although requiring each national bank "to keep and have on deposit in the Treasury of the United States in *lawful money* of the United States a sum equal to 5 per centum of its circulation, to be held and used for the redemption of such circulation," nevertheless declares that the bank notes on presentation to the Treasurer in sums of one thousand dollars, or any multiple thereof, "shall be redeemed in United States notes," and furthermore requires the national banks to reimburse the Treasurer for their notes redeemed by deposits of United States notes. These provisions of law have been strictly enforced. The banks have been required to deposit United States notes in reimbursement for their notes redeemed, and all notes presented for redemption have been paid for in United States notes, except when standard silver dollars or fractional silver coins were preferred by the holder. In one or two cases, where gold coins were tendered for credit of the 5

per cent. fund, they were accepted, but with the distinct understanding that such acceptance should not prejudice the right of the Treasurer to require future deposits on that account to be made in United States notes. It is not considered desirable that any change should be made in the law or the practice in this respect. To permit deposits on account of the 5 per cent. redemption fund to be made in gold coin or silver dollars would necessarily lead to the payment of those coins in redemption of bank notes. If the coins so paid out should be forwarded to the owners of the bank-notes by express, it would subject them to such expense as to practically prevent redemptions. The only alternative would be to make payments by coin drafts on the principal cities. The objection might properly be made to this course that it would convert the redemption office into an agency for furnishing exchange, and that redemptions would be determined not by the condition of the notes or a desire for their conversion into lawful money, but by the holder's needs for exchange. So long as the United States notes remain in circulation and retain their legal-tender character and their redeemability in coin, economy and convenience will both be promoted without any sacrifice of principle by continuing to make them the basis of the system of bank-note redemption.

SEMI-ANNUAL DUTY.

The semi-annual duty assessed and collected by the Treasurer of the United States from national banks for the fiscal year 1879 is as follows:

On circulation	\$3,009,647 16
On deposits	3,309,668 90
On capital	401,920 61
Total	6,721,236 67

The total amount of semi-annual duty collected by this office from the national banks for the fiscal years 1864 to 1879, which is more fully set forth in Table 16 of the appendix, is as follows:

On circulation	\$42,787,526 30
On deposits	43,644,693 50
On capital	6,337,479 12
Total	92,769,698 92

DEPOSITARY BANKS.

The total receipts of public money during the fiscal year by depositary banks, exclusive of receipts on loan account, were \$109,397,525.67, the average daily balance being at this time about \$8,000,000, secured by the deposit with this office of some \$15,000,000 in United States bonds. The receipts of public money by depositary banks from 1864 to 1879, inclusive, aggregate \$3,418,147,872.47, which, with the exception of a very small amount, has been accounted for to the Treasury. There were at the close of the fiscal year 127 depositary banks, exclusive of those designated in connection with refunding operations, four of which were designated during the year. One bank was discontinued as a depositary during the year.

The following statement shows the receipts, disbursements, and bal-

CLEARING-HOUSE CERTIFICATES.

These certificates were first issued in the fiscal year 1873 for the better security of bank reserves and to facilitate bank clearing-house exchanges. They are issued to national banks only, on deposit of United States notes, and amounted at the close of the fiscal year to \$554,730,000, of which amount there had been redeemed \$525,400,000, leaving the amount outstanding \$29,330,000. The issues during the past fiscal year were \$89,765,000, and the redemptions \$106,680,000; the excess of redemptions over issues indicating the demand for United States notes on the part of the banks. The following table shows the amount of these certificates issued, redeemed, and outstanding for the fiscal years 1873 to 1879 inclusive. It differs from the public debt statement for the reason that certificates are issued and redeemed at various offices too late in the month to be reported and taken up in that statement:

Year.	Issued.	Redeemed.	Outstanding as per Treasurer's books.
1873	\$57,240,000	\$25,430,000	\$31,810,000
1874	137,905,000	78,915,000	58,990,000
1875	219,000,000	159,955,000	59,045,000
1876	301,400,000	268,260,000	33,140,000
1877	378,285,000	324,305,000	53,980,000
1878	464,965,000	418,720,000	46,245,000
1879	554,730,000	525,400,000	29,330,000

GOLD CERTIFICATES.

The issue of gold certificates having been discontinued by direction of the Secretary of the Treasury on December 1, 1878, the amount outstanding decreased from \$44,367,000 on June 30, 1878, to \$15,413,700 on June 30, 1879. The amount issued during the fiscal year was \$12,317,400 and the amount redeemed \$41,270,700. The issue of these certificates was authorized by the fifth section of the act of March 3, 1863 (12 Statutes, 711), but none were issued until November 13, 1865. Since that date certificates have been issued amounting in the aggregate to \$981,134,880.46, of which \$22,853,480.46 were issued through this office, and the remainder through the office of the Assistant Treasurer in New York. The entire amount of Washington certificates has been redeemed.

The following table shows the amount of gold certificates issued and redeemed during each fiscal year from 1866 to 1879, inclusive, the grand total issued and redeemed, and the amount outstanding at the close of each year:

Period.	Issued during the fiscal year.	Total issued.	Redeemed during the fiscal year.	Total redeemed.	Outstanding.
From November 13, 1865, to June 30, 1866	\$38,493,000 00	\$38,493,000 00	\$37,545,000 00	\$37,545,000 00	\$10,947,800 00
In fiscal year 1867	109,171,820 00	207,615,280 00	101,293,000 00	188,841,700 00	18,773,580 00
In fiscal year 1868	77,900,400 00	285,575,680 00	79,055,340 00	267,897,040 00	17,678,640 00
In fiscal year 1869	80,663,180 00	366,238,840 00	65,255,620 00	333,152,660 00	33,086,180 00
In fiscal year 1870	76,731,000 00	442,969,840 00	78,270,120 00	408,422,780 00	34,547,120 00
In fiscal year 1871	56,577,000 00	499,546,840 00	71,237,820 00	479,660,600 00	19,886,240 00
In fiscal year 1872	63,229,500 00	562,776,340 00	51,029,500 00	530,690,100 00	32,086,240 00
In fiscal year 1873	55,570,500 00	618,346,840 00	48,198,800 00	578,888,900 00	39,460,000 00
In fiscal year 1874	91,117,780 46	699,464,620 46	97,752,680 46	676,639,580 46	22,825,100 00
In fiscal year 1875	70,250,100 00	769,714,720 46	71,278,900 00	747,918,480 46	21,796,240 00
In fiscal year 1876	90,619,100 00	860,333,820 46	83,734,000 00	831,652,480 46	28,681,400 00
In fiscal year 1877	58,141,200 00	918,475,020 46	45,250,000 00	876,902,480 46	41,572,600 00
In fiscal year 1878	50,342,400 00	968,817,420 46	47,548,000 00	924,450,480 46	44,367,000 00
In fiscal year 1879	12,317,400 00	981,134,820 46	41,270,700 00	965,721,180 46	15,413,700 00

United States. Section 4 requires that there shall be carried to the credit of that fund one-half of the compensation for services rendered for the Government by the Central Pacific and Union Pacific Railroad Companies, and that the Central Pacific Railroad Company shall pay into the Treasury to the credit of the sinking fund, on the 1st day of February in each year, \$1,200,000, and the Union Pacific Railroad Company \$850,000, or so much of those sums as shall be necessary to make the five per cent. of their net earnings payable to the United States under the act of July 1, 1862 (12 Statutes, 489), and the whole sum earned by them as compensation for services rendered for the United States, together with the sum required to be paid by this section, amount in the aggregate to twenty-five per centum of their whole net earnings for the year ending on the 31st day of December next preceding.

In pursuance of instructions from the Secretary of the Treasury dated January 29, 1879, the sums which had been withheld from the companies from July 1, 1878, to that date, under the act above cited, were invested in five per cent. bonds of the funded loan of 1881, registered in the name of the "Treasurer of the United States, custodian, for the Secretary of the Treasury, trustee," and stamped as required by the act so as to show that they belong to the sinking funds for those companies respectively, and that they are not good in the hands of other holders than the Secretary of the Treasury until they shall have been indorsed by him and disposed of as required by the act.

Further investments of the same nature have been made from time to time of the amounts withheld since that date. The amount of bonds held on account of the sinking fund for each company is now as follows:

Union Pacific Railroad Company	\$256,450
Central Pacific Railroad Company	194,900

The interest accruing on the bonds is deposited in the Treasury as it falls due, as a miscellaneous receipt on account of the proper fund, and is subsequently withdrawn and applied in the same manner as the moneys originally withheld from the companies.

The first payments under section 4 were due and payable February 1, 1879, but have been withheld from the United States, with the exception of \$220,520.78 from the Central Pacific Railway Company, pending the decision of the Supreme Court, recently rendered as to the constitutionality of the act in question, which was contested by the railway companies affected thereby.

TRUST FUNDS.

The bonds and stocks of the Indian Trust Fund, at the close of the fiscal year, in custody of this office in conformity with the act of Congress of June 10, 1876, amounted to \$5,180,066.83 $\frac{3}{4}$. Of this amount \$2,965,750 were United States bonds as follows:

Six per cent. bonds of 1881	\$500
Pacific Railroad bonds, currency 6s	280,000
Ten-forty bonds, 5 per cent	86,400
Consols of 1868, 6 per cent	10,000
Funded loan of 1881, 5 per cent	2,188,900
Consols of 1907, 4 per cent	399,950
	<hr/>
	2,965,750

The remainder, amounting to \$2,214,316.83 $\frac{3}{4}$, consisting of bonds issued by States, or under the authority of State enactments, are set forth in a table in the appendix to this report. The following States have over due and unpaid interest-bonds in these funds: Arkansas, Florida, Louisiana, North Carolina, South Carolina, Tennessee, and Virginia. The bonds of States and companies upon which interest is received are as

of the Treasury as trustee, have been issued and deposited in this office, the interest on which as it accrues is deposited to the credit of the appropriation "To promote the education of the blind," and afterwards drawn out in the manner specified in the law.

Pennsylvania Company.

The provisions of Department Circular No. 146, dated November 29, 1876, permit carriers of dutiable merchandise, in lieu of sureties, to deposit with this office United States registered bonds equal in amount to the prescribed penalty of the transportation bond. Under that authority \$200,000 in registered bonds of the funded loan of 1891 are held in trust for the Pennsylvania Company for the security of unappraised dutiable merchandise and dutiable merchandise in bond.

Manhattan Savings Institution.

Under the provisions of the act of December 19, 1878, for the relief of the Manhattan Savings Institution of New York, duplicates of registered United States bonds alleged to have been stolen from its vaults were issued to the Treasurer, in trust for that institution, to the amount of \$800,000. Subsequently a less amount being deemed sufficient to protect the United States from loss, portions thereof have been surrendered at various times, leaving \$250,000 now on deposit.

CONCLUSION.

For additional information pertaining to the public business transacted by this office, your attention is invited to the various tables of the appendix to this report.

I desire also to bear witness to the general faithfulness and industry of the subordinate officials and employés, almost all of whom are constantly intrusted with the handling of money and securities, and many with the receipt and disbursement of large amounts. To their integrity, skill, and carefulness is due the fact that there has been no loss of public money from this office during the year.

Very respectfully,

JAS. GILFILLAN,
Treasurer of the United States.

HON. JOHN SHERMAN,
Secretary of the Treasury.

REPORT OF THE REGISTER OF THE TREASURY.

TREASURY DEPARTMENT,
REGISTER'S OFFICE,
Washington, November 1, 1879.

SIR: I have the honor to submit herewith a report in detail of the work performed in the several divisions of this bureau during the year ended June 30, 1879:

LOAN DIVISION.

The total number of United States coupon and registered bonds issued during the year was 711,363, as follows:

Coupon bonds.....	433,711
Registered bonds.....	272,652

Bonds canceled:

.....	258,547
.....	135,565
.....	<u>394,112</u>

Bonds issued:

Coupon.....	\$249,249,300 00
Registered.....	323,927,250 00
Issued in exchange for coupon (Oregon war debt).....	14,200 00
Bonds issued in exchange for coupon.....	121,336,550 00
Bonds issued upon transfers.....	452,461,583 66
.....	<u>1,147,032,883 66</u>

On preceding year.....	\$462,117,913 15
Present year.....	624,920,970 51

Bonds canceled:

Converted into registered.....	121,336,550 00
Bonds transferred.....	452,461,583 66
Transferred (Oregon war debt).....	14,200 00
Bonds redeemed (per records of this office).....	102,072,200 00
Bonds returned (per records of this office).....	47,043,300 00
.....	<u>722,927,833 66</u>

Canceled coupon bonds turned over to committee for de- struction.....	\$157,562,000 00
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The vault account shows that there was on hand July 1, 1879, bonds held by Treasury agent abroad.....	542,797,250 00
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Bonds received during the year:

.....	227,650,000 00
.....	1,469,295,200 00
per cent. bonds, District of Columbia.....	3,350,000 00
.....	<u>2,249,072,450 00</u>

Bonds disposed of during the year:

Bonds issued.....	\$249,263,500 00
Bonds issued.....	894,835,100 00
per cent. District of Columbia bonds issued.....	2,904,000 00

Bonds delivered for destruction:

Bonds.....	87,431,900 00
per cent. District of Columbia bonds.....	771,750 00

June 30, 1879:

.....	52,922,650 00
.....	949,536,050 00
per cent. District of Columbia bonds.....	446,000 00
Balance of agent in Europe.....	10,961,500 00
.....	<u>2,249,072,450 00</u>

The average issue has been nearly twenty-three hundred bonds, or three million eight hundred thousand dollars, almost treble of the preceding year.

Loans.	Direct issues.			Exchanges.			Transfers.			Total issue.
	No. of cases.	Bonds issued.	Amount.	No. of cases.	Bonds issued.	Amount.	No. of cases.	Bonds issued.	Amount.	
Spanish indemnity.....	R.....						6	10	\$36,283 06	\$36,283 06
1861—February 8.....	C.....						311	858	2,424,000 00	3,680,000 00
Oregon war.....	R.....			36	106	\$246,000	5	24	14,200 00	14,200 00
1861—July 17.....	C.....			294	1,404	5,980,950	1,373	6,423	24,295,000 00	30,264,950 00
1863.....	C.....			214	675	2,137,000	758	2,945	16,038,200 00	18,205,200 00
1864—10-40s.....	C.....			104	601	1,408,400	787	5,348	31,250,800 00	32,655,200 00
Consols of 1865.....	C.....			153	1,082	5,130,350	445	5,064	46,328,350 00	51,458,700 00
Consols of 1867.....	C.....			1,394	7,014	32,000,250	1,399	13,706	69,109,350 00	121,175,600 00
Consols of 1868.....	C.....			100	206	555,000	230	689	2,065,000 00	2,650,000 00
Pacific Railroad loans.....	R.....						371	1,877	9,282,000 00	9,282,000 00
5 per cent. funded, 1881.....	C.....			684	5,826	82,308,650	2,603	13,749	58,734,200 00	91,042,850 00
4½ per cent. funded, 1891.....	C.....	7,450	\$8,175,900							8,175,900 00
		375	2,900,000							2,900,000 00
4 per cent. funded, 1907.....	C.....	431,227	243,073,400	467	3,316	12,369,500	3,013	17,894	56,480,900 00	71,603,400 00
		5,905	243,073,400							243,073,400 00
3.65 per cent. District of Columbia.....	R.....	97,662	271,177,250	1,250	22,513	28,528,450	9,982	60,808	118,511,500 00	408,217,200 00
		11,439								
				106	243	657,000	155	789	2,247,000 00	2,904,000 00
Total.....	17,351	530,614	573,228,550	4,667	43,609	121,328,550	21,438	131,142	452,475,783 66	1,147,038,883 66

NOTE AND COUPON DIVISION.

At the close of the fiscal year ending June 30, 1879, the employes of this division consisted of twenty-eight clerks, ten males and eighteen females, and two messengers.

The whole number of clerks employed during the year was thirty-three, ten males and twenty-three females.

The average number of clerks per month during the year was twenty-six, eight males and eighteen females.

The following consolidated statement exhibits the character and amount of work accomplished during the fiscal year ending June 30, 1879.

Redeemed, exchanged, and transferred United States bonds, with coupons attached, examined, registered, and scheduled for destruction.

Authorizing act.	No. of bonds.	Amount.	No. of coupons.
March 3, 1863, May and November	80,104	\$69,698,300	1,289,017
March 3, 1863, consols	39,912	20,184,850	568,509
July 17 and August 5, 1861	6,229	4,831,600	33,495
July 14, 1870, and January 20, 1871, funded loan 1881, 5 per cent	46,973	42,171,800	609,868
July 14, 1870, and January 20, 1871; funded loan 1891, 4½ per cent	19,298	16,350,200	1,012,014
July 14, 1870, and January 20, 1871, consols 1907, 4 per cent	23,783	16,466,000	2,751,176
	218,279	169,092,750	6,264,139

Treasury-notes, interest coin-checks, coin and currency certificates, assorted, arranged, counted, registered, and compared.

Notes, interest coin-checks, and certificates.	Authorizing act.	No. of pieces.	Amount.
Three years 7½ Treasury-notes	July 17, 1861	3	\$200 00
Certificates of indebtedness	Mar. 1, 1863	1	1,000 00
One and two years' 5 per cent. notes	Mar. 3, 1863	145	3,630 00
Coin-certificates	do	28,875	58,482,000 00
Three years' 6 per cent. compound-interest notes	Mar. 3, 1863	650	14,130 00
Three years' 7½ Treasury-notes	June 30, 1864	80	10,350 00
Interest coin checks, 1881	Mar. 3, 1863	17,417	7,333,186 29
Interest coin checks, 1891	July 14, 1870	16,681	4,323,243 56
Interest coin checks, 1907	Jan. 20, 1871	12,631	1,272,142 03
Currency-certificates	July 14, 1870	5,997	54,105,000 00
Interest checks, old funded debt, District of Columbia	Jan. 20, 1871	581	27,478 39
	June 8, 1872	83,070	125,324,360 49

Redeemed coupons detached from bonds and notes, assorted, arranged numerically, and counted, 2,628,560; registered, 2,394,689; examined and compared, 2,361,691.

NOTE AND FRACTIONAL CURRENCY DIVISION.

Statement showing the number of notes and amount of United States notes and fractional currency examined, counted, canceled, and destroyed for the fiscal year ending June 30, 1879.

	No. of notes.	Amount.
United States notes, new issue	329,622	\$2,336,000
United States notes, series 1869	3,164,261	25,890,150
United States notes, series 1874	2,708,267	6,463,350
United States notes, series 1875	10,385,890	25,562,450
United States notes, series 1876	1,030,063	2,577,860
United States demand notes	118	785
United States fractional currency, 1st issue	21,840	7,990
United States fractional currency, 2d issue	35,600	6,435
United States fractional currency, 3d issue	83,608	8,855
United States fractional currency, 4th issue	600,000	87,000
United States fractional currency, 4th issue, 2d series	40,000	20,000
United States fractional currency, 4th issue, 3d series	144,000	72,000
United States fractional currency, 5th issue	2,699,000	523,600
	21,341,929	63,565,465

TONNAGE DIVISION.

The total tonnage of the country exhibits a decrease of 43,164 tons, the enrolled tonnage having increased 92,242 tons, the licensed (under 20 tons) 2,103 tons, while the registered tonnage has decreased 137,514 tons.

The aggregate has been reduced by vessels lost at sea and sold to foreigners during years past, which were not reported to this office or taken from the tonnage balance until the past year. This alone amounts to near the decrease from the previous year.

Below are given the totals for the last two years:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Registered	3,037	1,629,047	2,717	1,491,533
Enrolled and licensed	22,227	2,583,717	22,494	2,678,097
Total	25,264	4,212,764	25,211	4,169,601

The comparison of the different classes of vessels is as follows:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Sailing-vessels	17,523	2,521,319	17,042	2,422,813
Steam-vessels	4,472	1,167,678	4,569	1,176,172
Canal-boats	1,071	88,691	1,206	103,738
Barges	2,198	455,076	2,394	466,878
Total	25,264	4,212,764	25,211	4,169,601

It may be seen from the foregoing that the steam-tonnage has increased 8,493 tons, the canal-boat tonnage 15,046 tons, and the barge tonnage 31,802 tons, while the sailing-tonnage has decreased 98,506 tons.

The proportion of the sailing-tonnage registered is 55 per centum, and the steam-tonnage 13 per centum.

SHIP-BUILDING.

The following table exhibits the class, number, and tonnage of the vessels built during the last two years:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Sailing-vessels	532	106,067	468	66,867
Steam-vessels	334	61,860	335	86,361
Canal-boats	19	1,908	36	4,069
Barges	873	45,669	293	35,733
Total	1,258	235,504	1,132	193,030

From the foregoing it appears that the amount built during the past year was less by 42,474 tons than that of the preceding year.

The tonnage built during the last two years in the several grand divisions of the country is shown below:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Atlantic and Gulf coasts.....	634	143,805	592	104,475
Pacific coast.....	63	11,333	65	11,207
Northern lakes.....	101	11,438	95	15,135
Western rivers.....	460	68,928	330	62,213
Total.....	1,258	235,504	1,132	193,030

The following table exhibits the iron tonnage built in the country since 1868:

	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Sailing vessels.....		1,039	679	2,067								
Steam-vessels.....	2,801	3,545	7,602	13,412	12,760	26,548	33,097	21,632	21,346	5,927	26,960	22,008
Total.....	2,801	4,584	8,281	15,479	12,760	26,548	33,097	21,632	21,346	5,927	26,960	22,008

Tables showing the amount of iron tonnage outstanding may be found in Part 2, Report on Commerce and Navigation.

THE FISHERIES.

The tonnage engaged in the fisheries during the last two years is as follows:

	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Cod and mackerel fisheries.....	2,435	86,546	2,571	79,885
Whale fisheries.....	182	39,700	185	40,028

Below is shown the amount of tonnage employed in the cod and mackerel fisheries, with the per centum of each State:

State.	Tonnage.	Per cent.
Maine.....	19,359	24.4
New Hampshire.....	1,092	1.3
Massachusetts.....	41,755	52.2
Rhode Island.....	2,794	3.5
Connecticut.....	4,835	6.0
New York.....	7,886	9.9
New Jersey.....	25	0.0
Pennsylvania.....	5	0.0
Virginia.....	20	0.0
California.....	2,124	2.6
Oregon.....	70	0.1
Total.....	79,885	100.0

This shows a decrease of about 8 per cent. during the year.

The tonnage employed in the whale fisheries is given below :

Customs districts.	1878.		1879.	
	Vessels.	Tons.	Vessels.	Tons.
Boston, Mass.	4	423	5	531
Barnstable, Mass.	23	2,209	20	1,840
Edgartown, Mass.	3	634	4	720
New Bedford, Mass.	141	34,882	144	35,298
New London, Conn.	11	1,552	12	1,629
San Francisco, Cal.	2	132	.....	.....
Total.....	182	39,700	185	40,028

Of the above nearly 88 per cent. belongs at New Bedford. Complete tables showing the various classes of tonnage may be found in the appendix to this report.

DIVISION OF RECEIPTS AND EXPENDITURES.

The following statement exhibits the work of this division for the year ending June 30, 1879 :

The number of warrants registered during the year for civil, diplomatic, miscellaneous, internal-revenue, and public-debt expenditures and repayments was	24,025	
In the preceding year	22,145	
Increase		1,880
The number of warrants registered for receipts from customs, lands, internal revenue, direct tax, and miscellaneous sources, was.....	11,220	
In the preceding year	10,924	
Increase		296
The number of warrants registered for payments and repayments in the War, Navy, and Interior (pension and Indian) Departments was	16,797	
In the preceding year	11,332	
Increase		5,465
The number of drafts registered was	40,760	
In the preceding year	30,112	
Increase		10,648
The number of journal pages required for the entry of accounts relating to the civil, diplomatic, internal-revenue, miscellaneous, and public debt receipts and expenditures was	5,432	
In the preceding year	5,087	
Increase		345
The number of certificates furnished for settlement of accounts was.....	12,759	
In the preceding year	12,933	
Decrease		174
The number of accounts received from the First and Fifth Auditors and Commissioner of General Land Office was.....	22,862	
In the preceding year	21,578	
Increase		1,284

In the appendix will be found a statement of the receipts and expenditures of the government as required by the standing order of the House of Representatives of December 30, 1791, and section 237 of the Revised Statutes; also, statements of the money expended and number of persons employed, and the occupation and salary of each person at each custom-house, as required by section 258 of the Revised Statutes.

Very respectfully, your obedient servant,

G. W. SCOTFIELD,
Register.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

Statement of outstanding principal of the public debt of the United States on the 1st of January of each year from 1791 to 1842, inclusive; and on the 1st of July of each year from 1843 to 1879, inclusive.

January 1, 1791.....	\$75,463,476 52	January 1, 1836.....	\$336,057 83
1792.....	77,227,924 60	1837.....	3,308,124 07
1793.....	80,352,634 04	1838.....	10,434,221 14
1794.....	78,427,404 77	1839.....	3,573,843 82
1795.....	80,747,587 39	1840.....	5,250,875 54
1796.....	83,762,172 07	1841.....	13,594,480 73
1797.....	82,064,479 33	1842.....	20,601,226 28
1798.....	79,228,529 12	July 1, 1843.....	32,742,923 00
1799.....	78,408,609 77	1844.....	23,461,652 50
1800.....	82,976,294 35	1845.....	15,925,303 01
1801.....	83,038,053 80	1846.....	15,550,202 97
1802.....	86,712,632 25	1847.....	38,826,534 77
1803.....	77,054,686 30	1848.....	47,044,862 23
1804.....	86,427,120 88	1849.....	63,061,858 69
1805.....	82,312,150 50	1850.....	63,452,773 53
1806.....	75,723,270 06	1851.....	68,304,796 02
1807.....	69,218,393 64	1852.....	66,199,341 71
1808.....	65,196,317 97	1853.....	59,803,117 70
1809.....	57,023,102 09	1854.....	42,242,222 42
1810.....	53,173,217 52	1855.....	35,586,858 56
1811.....	48,005,587 76	1856.....	31,972,537 90
1812.....	45,209,737 90	1857.....	28,699,831 85
1813.....	55,962,827 57	1858.....	44,911,881 03
1814.....	81,487,846 24	1859.....	58,496,837 88
1815.....	99,833,660 15	1860.....	64,842,287 86
1816.....	127,334,933 74	1861.....	90,580,873 72
1817.....	123,491,965 16	1862.....	524,170,412 13
1818.....	103,466,633 83	1863.....	1,110,772,138 63
1819.....	95,529,648 28	1864.....	1,815,784,370 57
1820.....	91,015,566 15	1865.....	2,080,647,869 74
1821.....	89,987,427 66	1866.....	2,773,236,173 69
1822.....	93,540,676 98	1867.....	2,078,126,103 87
1823.....	90,875,877 28	1868.....	2,611,687,851 19
1824.....	90,269,777 77	1869.....	2,588,452,213 94
1825.....	83,788,432 71	1870.....	2,480,672,427 81
1826.....	81,054,059 99	1871.....	2,353,211,332 32
1827.....	73,987,357 20	1872.....	2,233,251,078 78
1828.....	67,475,043 87	1873.....	2,234,462,743 20
1829.....	58,421,413 67	1874.....	2,251,690,218 43
1830.....	48,565,406 50	1875.....	2,232,284,281 95
1831.....	39,123,191 68	1876.....	2,180,304,817 15
1832.....	24,322,235 18	1877.....	2,205,301,142 10
1833.....	7,001,698 83	1878.....	2,256,205,398 20
1834.....	4,760,082 08	1879.....	2,349,567,232 04
1835.....	37,513 05		

CUSTOMS.

Statement of expenses for collecting the revenue from customs, by districts, for the fiscal year ending June 30, 1879.

York, Me.....	\$253 93
Bangor, Me.....	4,422 00
Frenchman's Bay, Me.....	4,560 00
Waldoborough, Me.....	6,850 00
Portland, Me.....	71,303 00
Belfast, Me.....	4,152 00
Wiscasset, Me.....	3,641 22
Machias, Me.....	2,970 00
Saco, Me.....	869 51
Passamaquoddy, Me.....	22,223 68
Bath, Me.....	4,907 05
Castine, Me.....	5,910 00
Aroostook, Me.....	7,193 34
Kennebunk, Me.....	780 00
Portsmouth, N. H.....	6,492 00
Vermont, Vt.....	62,656 81
New Bedford, Mass.....	5,656 88
Gloucester, Mass.....	13,410 00
Boston, Mass.....	592,771 00
Fall River, Mass.....	4,812 51
Marblehead, Mass.....	1,173 00
Plymouth, Mass.....	2,558 75
Barnstable, Mass.....	5,920 55
Carried forward.....	835,492 23

Brought forward	835,492 23
Nantucket, Mass	1,592 00
Salem, Mass	7,391 95
Newburyport, Mass	2,852 74
Edgartown, Mass	4,966 00
Bristol, R. I.	1,700 65
Providence, R. I.	20,570 00
Newport, R. I.	3,759 74
Stonington, Conn	1,449 31
Fairfield, Conn	2,378 00
New Haven, Conn	16,144 00
Middletown, Conn	3,002 80
New London, Conn	6,259 00
New York, N. Y.	2,113,642 61
Cape Vincent, N. Y.	12,170 32
Genesee, N. Y.	20,037 14
Niagara, N. Y.	38,597 71
Oswego, N. Y.	31,895 13
Sag Harbor, N. Y.	1,323 16
Dunkirk, N. Y.	2,578 00
Champlain, N. Y.	25,627 00
Oswegatchie, N. Y.	17,653 58
Albany, N. Y.	9,461 65
Buffalo Creek, N. Y.	43,952 22
Burlington, N. J.	219 00
Great Egg Harbor, N. J.	2,049 00
Newark, N. J.	4,194 00
Little Egg Harbor, N. J.	2,503 07
Bridgeport, N. J.	376 87
Little Creek, N. J.	201 00
Perth Amboy, N. J.	6,044 14
Eric, Pa.	4,700 31
Philadelphia, Pa.	311,815 26
Pittsburgh, Pa.	10,412 98
Delaware, Del	8,023 00
Annapolis, Md	1,456 00
Eastern, Md	2,641 47
Baltimore, Md	272,688 00
Georgetown, D. C.	3,575 00
Norfolk, Va.	12,437 00
Petersburg, Va.	2,224 59
Tappahannock, Va.	850 00
Richmond, Va.	5,371 38
Yorktown, Va.	457 70
Alexandria, Va.	2,317 00
Cherrystone, Va.	2,507 00
Wheeling, West Va.	655 05
Wilmington, N. C.	13,430 99
Beaufort, N. C.	1,393 17
Faulcon, N. C.	3,766 93
Albemarle, N. C.	2,261 00
Charleston, S. C.	18,511 85
Beaufort, S. C.	4,005 40
Georgetown, S. C.	1,096 00
Savannah, Ga.	20,231 11
Brunswick, Ga.	6,935 00
Saint Mary's, Ga.	2,341 00
Saint Mark's, Fla.	2,051 00
Fernandina, Fla.	4,949 35
Saint Augustine, Fla.	2,922 03
Pensacola, Fla.	17,581 66
Saint John's, Fla.	2,787 00
Apalachicola, Fla.	834 00
Jacksonville, Fla.	40 00
Key West, Fla.	27,487 87
Mobile, Ala.	21,348 10
Natchez, Miss	375 00
Vicksburg, Miss	905 53
Carried forward	4,043,984 75

Brought forward	\$4,043,984 75
Pearl River, Miss	4,686 00
New Orleans, La	260,277 65
Teché, La	6,993 49
Brazos Santiago, Tex	44,010 00
Galveston, Tex	33,551 84
Corpus Christi, Tex	18,927 68
Galveston, Tex	12,182 00
Paso del Norte, Tex. and New Mexico	16,556 47
Memphis, Tenn	5,002 00
Nashville, Tenn	734 55
Louisville, Ky	9,056 00
Cincinnati, Ohio	4,458 48
Cuyahoga, Ohio	15,823 58
Bandusky, Ohio	2,532 48
Cincinnati, Ohio	25,170 00
Detroit, Mich	48,737 25
Michigan, Mich	2,619 00
Superior, Mich	6,852 55
Iron, Mich	30,678 67
Evansville, Ind	921 28
Chicago, Ill	2,108 56
Chicago, Ill	94,210 48
Galena, Ill	851 22
La Crosse, Wis	1,351 00
Milwaukee, Wis	5,497 00
Minnesota, Minn	7,556 20
Duluth, Minn	7,320 00
Burlington, Iowa	372 00
Des Moines, Iowa	362 00
Saint Louis, Mo	93,857 88
Montana and Idaho	2,103 76
Dakota, Dak	7,246 00
Alaska, Alaska	7,359 65
Admiralty Sound, Wash	15,771 42
Oregon, Oreg	7,320 35
Southern Oregon	1,634 00
Willamette, Oreg	22,117 14
Nebraska, Neb	1,145 84
San Diego, Cal	8,548 00
San Francisco, Cal	327,842 22

5,210,239 44

Contingent expenses and fees in custom cases	\$18,076 15
Transportation	1,310 17
Amount paid by disbursing agents for salaries, &c	153,624 88
Miscellaneous, stationery, &c	94,110 88

267,182 08

Total net expenditures 5,477,421 52

Statement of expenditures for assessing and collecting the internal revenue for the fiscal year ending June 30, 1879, embracing salaries and expenses of collectors and salaries and expenses of supervisors and subordinate officers.

Alabama, first district	\$10,842 41
second district	19,048 56
Arkansas	26,226 74
third district	1,309 99
Arizona	27,536 73
Colorado	5,022 07
California, first district	10,150 03
fourth district	
California, first district	\$40,081 33
fourth district	27,384 78
Connecticut, first district	67,466 11
second district	
Connecticut, first district	17,502 35
second district	13,138 40
Carried forward	30,640 75
	<hr/>
	170,706 66

Amount forward		\$170,706 66
.....		6,008 18
.....		12,182 53
.....		11,499 80
First district	43,472 79	
Second district	26,369 49	
.....		69,842 28
.....		7,227 25
Third district	61,146 58	
Fourth district	8,741 25	
Fifth district	13,440 50	
Sixth district	20,398 01	
Seventh district	55,188 23	
Eighth district	5,611 01	
Ninth district	27,122 17	
Tenth district	22 50	
Eleventh district	17,456 25	
.....		208,526 50
Twelfth district	13,453 41	
Thirteenth district	32,591 87	
Fourteenth district	14,942 25	
Fifteenth district	18,602 72	
Sixteenth district	8,745 95	
Seventeenth district	7,019 37	
.....		95,355 57
Eighteenth district	8,669 99	
Nineteenth district	16,669 85	
Twentieth district	9,240 21	
Twenty-first district	7,701 55	
.....		42,280 59
.....		11,680 47
Twenty-second district	33,622 10	
Twenty-third district	79 48	
Twenty-fourth district	104,813 72	
Twenty-fifth district	44,151 35	
Twenty-sixth district	66,393 37	
Twenty-seventh district	30,609 60	
Twenty-eighth district	13,171 82	
.....		293,041 44
.....		29,918 27
.....		8,788 49
Twenty-ninth district	26,712 48	
Thirtieth district	27,723 38	
Thirty-first district	13,724 78	
.....		68,160 64
Thirty-second district	49,142 77	
Thirty-third district	16,741 13	
.....		65,883 90
.....		8,483 67
Thirty-fourth district	17,843 22	
Thirty-fifth district	9,407 60	
Thirty-sixth district	6,384 28	
Thirty-seventh district	8,322 59	
.....		41,957 69
Thirty-eighth district	38,079 28	
Thirty-ninth district	10,620 87	
Fortieth district	15,432 04	
Forty-first district	11,172 25	
Forty-second district	19,500 05	
.....		94,804 49

Brought forward		\$1,284,009 84
New York—Continued.		
twelfth district	14,550 83	
fourteenth district	13,432 03	
fifteenth district	7,811 96	
twenty-first district	9,955 88	
twenty-fourth district	16,584 30	
twenty-sixth district	8,926 55	
twenty-eighth district	16,586 80	
thirtieth district	24,166 59	
		252,424 90
New Jersey, first district	10,592 30	
third district	11,400 15	
fifth district	25,125 25	
		47,117 70
Nevada		7,723 20
Nebraska		15,883 51
New Mexico		6,830 84
New Hampshire		10,095 08
North Carolina, second district	17,180 14	
fourth district	28,304 85	
fifth district	51,965 38	
sixth district	138,732 40	
seventh district	136 00	
		236,318 77
Ohio, first district	65,581 50	
third district	19,793 34	
fourth district	12,928 28	
sixth district	17,873 90	
seventh district	12,570 13	
tenth district	16,975 06	
eleventh district	14,090 10	
fifteenth district	11,902 12	
eighteenth district	24,718 98	
		196,433 41
Oregon		7,573 07
Pennsylvania, first district	54,412 59	
eighth district	18,471 34	
ninth district	26,552 35	
twelfth district	15,983 53	
fourteenth district	22,320 40	
sixteenth district	25,676 86	
nineteenth district	6,404 37	
twentieth district	9,198 62	
twenty-second district	49,372 39	
twenty-third district	17,092 74	
		245,485 19
Rhode Island		9,145 09
South Carolina		39,535 73
Tennessee, first district	417 86	
second district	16,851 51	
fourth district	170 80	
fifth district	78,600 22	
eighth district	9,464 55	
		105,504 94
Texas, first district	16,408 94	
third district	15,219 65	
fourth district	10,817 61	
		42,446 20
Utah		6,341 44
Vermont		5,630 84
Virginia, second district	23,396 92	
third district	22,818 67	
fourth district	19,190 79	
fifth district	29,243 45	
sixth district	42,769 04	
		137,418 87
first district	12,121 96	
second district	6,761 49	
		18,883 45
d forward		2,674,802 07

at forward	\$2,674,802 07
istrict	24,519 14
l district	8,186 25
istrict	11,925 32
istrict	8,021 48

itory	52,652 19
ry	5,735 07
	5,309 75

2,738,499 08

d by T. J. Hobbs for salaries of super-	666,480 66
transportation and expresses	5,292 61
telegraphing	1,903 12
	115,781 09
	789,457 48

3,527,956 56

penditures for Marine Hospital service, by districts, for the year ending June 30, 1879.

.....	\$725 31
.....	687 56
Me.....	885 00
.....	434 75
.....	5,188 66
.....	299 00
.....	315 43
Me.....	241 50
.....	301 50
.....	942 65
.....	302 50
ss.....	1,167 00
.....	13,776 23
.....	6,522 00
.....	2,699 20
.....	110 00
.....	22 00
.....	30 00
.....	3,444 25
.....	729 70
.....	1,609 13
.....	558 00
an.....	529 39
.....	42,165 68
Y.....	85 00
.....	620 35
.....	136 00
.....	236 50
Y.....	71 45
.....	5,669 01
.....	151 20
r, N. J.....	276 00
r, N. J.....	3,299 51
J.....	95 00
.....	5,113 62

Brought forward	\$156,352 13
Yorktown, Va	32 10
Wheeling, W. Va	438 00
Wilmington, N. C	1,707 38
Pamlico, N. C	987 67
Albemarle, N. C	677 00
Beaufort, N. C	34 08
Charleston, S. C	3,993 25
Beaufort, S. C	18 45
Georgetown, S. C	23 60
Savannah, Ga.	3,855 65
Brunswick, Ga.	7 00
Saint Mary's, Ga.	32 00
Saint Mark's, Fla.	247 20
Fernandina, Fla.	305 00
Saint John's, Fla.	1,271 25
Pensacola, Fla.	4,811 00
Apalachicola, Fla.	1,253 82
Key West, Fla.	4,621 57
Mobile, Ala.	6,137 95
Vicksburg, Miss.	3,921 30
Pearl River, Miss.	112 00
New Orleans, La.	26,115 94
Teche, La.	15 00
Brazos, Tex.	320 00
Corpus Christi, Tex.	654 50
Saluria, Tex.	99 75
Galveston, Tex.	8,822 32
Louisville, Ky.	11,255 92
Miami, Ohio.	2,917 90
Cuyahoga, Ohio.	4,605 53
Sandusky, Ohio.	19 00
Cincinnati, Ohio.	8,909 96
Memphis, Tenn.	3,208 00
Nashville, Tenn.	1,867 13
Michigan, Mich.	71 00
Detroit, Mich.	7,003 29
Superior, Mich.	410 77
Huron, Mich.	39 70
Evansville, Ind.	4,842 42
Cairo, Ills.	7,327 76
Chicago, Ills.	19,207 20
La Crosse, Wis.	1,688 07
Milwaukee, Wis.	4,207 19
Minnesota, Minn.	3,436 10
Duluth, Minn.	282 35
Dubuque, Iowa.	2,413 59
Saint Louis, Mo.	12,755 27
Puget Sound, W. T.	6,638 23
Southern Oregon.	185 50
Willamette, Oreg.	3,529 00
San Francisco, Cal.	22,023 42
Transportation	74 62
Disbursing agent.	18,893 24
Miscellaneous.	484 94

375,164 01

REPORT OF SUPERINTENDENT OF THE UNITED STATES
COAST SURVEY.OFFICE OF THE COAST AND GEODETIC SURVEY,
Washington, October 27, 1879.

SIR: I have the honor to present the following synopsis showing progress in the fiscal year ending June 30, 1879, in prosecuting the coast and geodetic survey of the United States. Details of the work will be given in my final report in December next. The operations of the year include hydrography of the coast of Maine from Petit Manan Light southward and westward to completed limits, and soundings in the eastern approaches to Mount Desert Island; drawings of prominent features of that island; soundings in Frenchman's Bay, near the Porcupine Islands; topography of those islands and of the shores of Skilling River, and of the shores of Union River Bay, near Ellsworth, Me.; topographical surveys of Long Island and Bartlett's Island; soundings in the approaches to Deer Isle, including parts of Jericho Bay and Placentia Bay, and in the approaches to Isle au Haut, developing there numerous ledges and also a ledge in Muscongus Bay; tidal observations at North Haven, in Penobscot Bay; geodetic observations at Gunstock Mount, Starr King Mount, and Mount Monadnock, in New Hampshire; light-houses at Portsmouth, N. H., and at Newburyport and Cape Ann, Mass., determined in position; reconnaissance for geodetic stations in Vermont; hydrography of the entrance and bar of Merrimac River, Massachusetts; inspection and verification of the harbor commissioner's survey of the upper harbor of Boston; sea currents observed and recorded at stations in the Gulf of Maine; examination for positions of aids to navigation along the coast of Massachusetts and Rhode Island; tidal observations in Buzzard's Bay and at Providence, R. I.; geodetic observations at Mount Prospect, N. Y.; hydrography of the vicinity of Block Island, including development of Southwest Ledge; positions examined of the aids to navigation along the coast of Connecticut and in Long Island Sound and Hudson River; the eastern part of Jamaica Bay surveyed and sounded; tidal observations at Sandy Hook, N. J., and at Governor's Island, New York Harbor; topography of the shores of the Hudson, near Peekskill; examination of the ground marks at triangulation points on the coast of New Jersey; geodetic observations at Pickles Mount and at Mount Horeb, in New Jersey; triangulation, topography, and hydrography, with special observations on the tides and currents of Delaware River, at Philadelphia, for the board of trade; hydrographic survey of the Delaware from Marcus Hook to New Castle, for the Light-House Board; geodetic observations connecting stations in Eastern Pennsylvania with points in Maryland; pendulum observations at stations in Pennsylvania; astronomical observations at Washington for determining the longitude of southern stations; magnetic declination, dip, and intensity determined as usual at Washington, D. C.; investigation of the oyster reefs in Tangier Sound, Pocomoke Sound, and James River, Virginia; tidal observations at Old Point Comfort; detailed survey of the shores of James River continued in the vicinity of Richmond, Va.; geodetic observations at stations in West Virginia; geodetic level determined at points between Hagerstown, Md., and Athens, in Ohio; positions determined of life-saving stations on the coast of Virginia and North Carolina, for entry on engraved charts; in Albemarle and Pamlico Sounds, compilation of notes for the Coast Pilot; development of a harbor of refuge inside of

In localities between the Atlantic coast and the Pacific coast, geodetic work has been advanced by marking a base line near Louisville, Ky., and selecting adjacent points for triangulation; by geodetic observations near Lebanon, in Tennessee; selection of geodetic points between Athens and Columbus, Ohio, and in Indiana between Indianapolis and New Albany; in Illinois points have been selected to connect with the base line on American Bottom, and observations were recorded at Springfield for the magnetic declination, dip, and intensity. Further westward the operations of the year include magnetic observations at Madison, Wis., and geodetic work between that city and the Mississippi River; also in Missouri beyond completed stations near the Gasconade River; magnetic observations at Great Bend, Sargent, Humboldt, Emporia, and Dodge City, in Kansas; geodetic observations in Nevada and in Colorado; magnetic observations at Denver and North Pueblo, Fort Lyon, Colorado Springs, and Greeley, in Colorado; and at Salt Lake City, Castle Rock, and Ogden, in Utah; at Laramie City, Rock Creek, Creston, Point of Rocks, Cheyenne, Fort Steele, Green River, and Carter Station, in Wyoming Territory.

Office operations of the year include the reduction and discussion of all the field observations, preparation for issue of the records and results; the drawing of hydrographic charts from the original note-books, and of topographical and hydrographic maps on the several scales of reduction from originals, for publication; engraving, electrotyping, and printing of the same; and repairs of instruments used in the survey.

Tide tables of the principal ports of the United States for the year 1880 have been published; drawings for fifty-nine charts have been in progress, and of these twenty-eight were completed within the year, nine of which were photolithographed. In engraving, one hundred and forty-five plates have received additions, twelve chart-plates have been completed, and engraving is in progress on ten others begun within the year.

An aggregate of twenty-three thousand two hundred and thirteen copies of charts has been issued, and returns show by three-fold increase in sales a large demand for them; nine hundred and sixty-three copies of the annual reports have been distributed; calls have been met, as heretofore, for information relating to local topography and hydrography, tides, magnetic variations, geographical positions, heights, distances, directions, and other particulars contained in the office records.

The second volume of the Atlantic Coast Pilot (for navigation between Boston and New York) has been published, and also a second edition of part of the Coast Pilot for the Gulf of Maine. The third volume, nearly ready for the printer, will complete descriptions of the coast and sailing directions for navigating between Passamaquoddy Bay and Chesapeake entrance, and notes are now in hand for a fourth volume, to include the coast south of Cape Henry.

Respectfully submitted.

C. P. PATTERSON,

Superintendent U. S. Coast and Geodetic Survey.

Hon. JOHN SHERMAN,

Secretary of the Treasury.

advantage of our weak points on the frontier to inflict heavy losses upon us. The records of this department show that since the close of the war of the rebellion fifty-five officers of the Army have been killed in Indian warfare, and a corresponding number wounded, besides a proportionate number of men killed and wounded. Among the list of killed will be found the names of such valuable officers as Canby, Custer, and Thornburgh.

INDIAN HOSTILITIES.

It was hoped that the last year would prove one of peace with the Indians, but this hope was disappointed by the hostilities of the Utes in Colorado and the Apaches in New Mexico, a full and particular account of which will be found in the report of the General of the Army. In the efforts for the suppression of these outbreaks the military authorities, including the officers and men engaged, have acted with great promptness and vigor. The conduct of Captain Paine, Company F, Fifth Cavalry, and of Captain Dodge, Company D, Ninth Cavalry, as shown in official reports, is worthy of high commendation.

The massacre of Agent Meeker and others at White River Agency; the killing of Lieutenant Weir, of the ordnance, a gallant young officer who had volunteered for duty with the expedition, and the fall of the lamented and gallant Major Thornburgh, and others of his command, are events greatly to be deplored; and in my judgment the government should persist in its demand for the surrender for trial and punishment of all Indians guilty of murder in connection with these affairs, and should visit upon the guilty the full penalty of their offenses. If Indians, who subsist upon the bounty of the government, can commit with impunity crimes such as these, and if the United States fails to punish them, the savages will find in these facts encouragement to repeat the outrages when opportunity and inclination shall prompt them to do so, while swift punishment in the present cases will teach these people, who understand little besides force, a wholesome lesson.

ABANDONED MILITARY POSTS.

This department has charge of a large number of abandoned military reservations. They have been rendered useless for military purposes by the advance of civilization and settlement, and are now simply a source of expense to the United States. Some of them are surrounded by settlements, and are, therefore, much more valuable than ordinary public lands. In some instances it would be more economical to sell the land, with the improvements, to the highest bidder; in other cases it might be desirable to sell the buildings, with a view to their removal, and then turn the land over to the Interior Department, to become a part of the public domain. In still other cases it might be desirable to remove the material now in the improvements to other posts which are still needed for military purposes, and where it could be utilized. It is certainly very desirable that authority be conferred upon the Secretary of War, in some manner consistent with the interest of the government, to dis-

cluded in the 25,000. Under this head the estimates for the current fiscal year were \$29,335,727.33; the appropriations to meet the same were \$26,978,847.33, and the present estimates are for \$29,319,794.78. The principal differences between the estimates and the appropriations are on account of the item for pay, &c., of the Army, which is made up of estimates based on arithmetical calculations, and on items for the Ordnance Department which relate to timely provisions for the public defense in any emergency that may arise.

The public works.—The estimates, as reduced, are \$7,557,034.42, which amount is \$396,043.34 less than the estimates for 1879, \$113,946.88 less than those for 1880, and \$3,237,460.19 less than the appropriations for 1880, which were \$10,794,494.61. The views expressed under this head in my last annual report are here renewed, as best explanatory to the reduction of these estimates, which, as transmitted to me, aggregated \$10,182,873.42. About seventeen-twentieths of this amount are for "the continuation of works once commenced under legal authority, and remaining unfinished for want of funds," and are annually submitted to Congress in accordance with law. (See sec. 231 R. S.)

The amounts appropriated for "fortifications and other works of defense" during the last five years have been insufficient to preserve all such government property from waste. This fact *per se* accounts for the annual increase in the amounts suggested for these works by the Chief Engineers. Under this title the estimates for 1880, which were \$3,188,400, were reduced by me to \$1,000,000, and were favorably considered in Congressional appropriations for \$150,000; and the present estimates, rendered in detail, for \$4,028,500, have been reduced in the aggregate to \$1,000,000, which amount could be wisely and properly applied to the preservation and care of these works.

The estimates for rivers and harbors rendered by items for \$14,326,650, have been reduced in the aggregate to \$5,015,000, which was the total of the amount appropriated for the fiscal year 1877, and which seems to have been sufficient for the promotion of the general commerce of the country during that time. In relation to the comparative differences between the amounts of estimates and appropriations, it seems to me that some embarrassments must always attend the discretionary preparation and consideration of these estimates, owing to the uncertainty which, perchance, must mark their future credit by Congress. Last year, for example, my estimates for fortifications, as has already been stated, were \$1,000,000, and the appropriations granted therefor were only \$150,000, while at the same time, the reverse of this principle or policy appeared, when on my estimates for rivers and harbors for \$5,015,000, the appropriations granted therefor were \$9,752,494.61.

The miscellaneous estimates are \$2,344,139.73, of which amount about one-fourth appertains annually to the departmental collection and diffusion of valuable official data, such as the observation and report of events through the Signal Service, the compilation and publication of official records of the war of the rebellion, and the like; and the re-

fided by me to the Adjutant-General, and has been prosecuted without intermission since the passage of the act, and is in an advanced state of completion.

The existing system of recruiting continues to be productive of good results. Recent inspections show that the character of the men composing the rank and file is high.

BUREAU OF MILITARY JUSTICE.

The Judge-Advocate-General reports, among other items of business, the receipt and review at his bureau of 1,673 records of general courts-martial, and the furnishing to the Secretary of War of 898 reports and opinions on questions of law.

He reports the convictions for desertion as increased during the past year by 24, and expresses the opinion that the two principal or most conspicuous causes of desertion in the Army are: 1. Drunkenness, or rather indiffgence in intoxicating liquors; 2. Oppressive or injudicious treatment of soldiers by non-commissioned officers, and especially first sergeants of companies invested with an excess of authority.

I concur with the Judge-Advocate-General in the recommendation that Congress, in making appropriations for his branch of the service, will appropriate a reasonable sum for the purchase of suitable law libraries for the use of the judge-advocates at the headquarters of the military geographical departments, the same being urgently needed.

He also recommends that the legislation heretofore initiated in the Senate for making *gambling* in the Army a punishable offense be renewed, and the bill heretofore proposed for the purpose, or some similar provision, be enacted by Congress.

He further indicates defects in the 72d and 104th Articles of War as embarrassing to the administration of military justice, and recommends that they be removed by legislation.

The Judge-Advocate-General renews his former recommendations for some declaratory legislation in reference to the 103d Article of War, the military statute of limitation. In my last annual report I invited attention to this important topic, and expressed the hope that an existing diversity of opinion and practice might be settled by some judicious legislation. The 103d Article of War provides that no person shall be liable to be tried and punished by a general court-martial for any offense which appears to have been committed more than two years before the issuing of the order for such trial, *unless, by reason of having absented himself or of some other manifest impediment, he shall not have been amenable to justice within that period.* Until recently, these saving words of the statute had been generally understood in the Army to be of equivalent effect to the terms "fleeing from justice," as used in section 1045, Revised Statutes, to defeat the operation of the statute of limitation in the Federal courts, and which long ago received judicial definition. But late opinions of the Attorney-General have held that mere absence from the Army without leave does not necessarily amount, in law, to the im-

pensation for responsibility and risk of loss involved in the care of money and supplies. In these recommendations I fully concur.

The department moved during the year 59,177 persons, 4,921 beasts, and 120,440 tons of supplies from the settlements to the military posts, many of which are in the far interior and at the end of long lines of communication. The cost of this transportation was \$2,215,968.05.

The embarrassment and expenditure arising in the legislation against the land-grant railroads still continues, and the repeal of this special legislation, which would leave these questions and claims to be settled on the principles of law and equity decided to be applicable by the Supreme Court, is again recommended by the Quartermaster-General and concurred in by me.

The Pacific Railroads transported 10,486 persons, 1,766 beasts, and 52,147,582 pounds of supplies during the year. At their regular tariff rates the value of this service was \$721,943.40. The total value of the military transportation over these roads to 30th June, 1879, is \$10,362,331.99.

The railroads who purchased material from the Quartermaster's Department, under executive orders of October, 1865, still owed the United States, on the 1st of July last, the sum of \$1,892,677.11. Of this amount the Nashville and Northwestern Railroad, which is insolvent, owes \$908,550.27, which amount it is not supposed will ever be paid.

Cavalry and artillery horses.—One thousand six hundred and eighty-six horses were bought at average cost of \$92.62. Last year the average price paid was \$117.23, or 20 per cent. higher. One thousand four hundred and eighty-nine mules were purchased at average price of \$105.41, which is 20 per cent. less than the price of last year, which was \$130.15.

Sales of disabled and unserviceable animals realized the sum of \$75,193.55, which has been deposited in Treasury to credit of miscellaneous receipts.

There were in service on June 30th 10,990 horses and 10,032 mules, which, with an Army of 25,000 men, is about 100 beasts to 120 men.

Our Army is more thoroughly provided with transportation than most others. It is always on a war footing, and when a savage tribe attacks a party and commits a massacre the relieving troops move, as in a recent instance, on a few hours' notice, a thousand miles from their cantonments and begin a march of 180 miles, through a desert, mountain country, the instant they reach the base of supplies on the Pacific Railroad, and complete it in less than three days and rescue the survivors.

The Quartermaster-General calls attention to the inequality of recent legislation on the subject of officers' horses and the hardship imposed on officers in some districts by abolishing the issues of fuel. Officers east of the Mississippi suffer from the first, those in the far western wilderness from the second.

Claims under act of July 4, 1864.—In the investigation and examina-

The Quartermaster's Depot at San Francisco has, at the request of the business men of the Pacific coast, been added to the list of general depots of the Quartermaster's Department, reserving, however, to the general commanding the Division of the Pacific authority in regard to supplies in the depot for his Division.

Congress, by the law of March 3, 1879, required the manufacture of Army supplies, when economical, to be established at the military prison at Fort Leavenworth. The boots and shoes and chairs for the Army are being made there by convict labor. Measures are instituted to begin the manufacture of harness at the prison, and the question of transferring to the prison the manufacture of wagons, ambulances, and other vehicles is under consideration.

Military cemeteries.—The military cemeteries, eighty in number, are in good order, and improve in beauty as cultivation improves. I caused the materials of the ancient portico of the old War Department, on its demolition to make room for the new building, to be transferred to the Arlington Cemetery, where the old columns and entablature have been used in constructing two handsome and appropriate entrances to that cemetery. It is suggested by the Quartermaster-General that the cemetery affords ample space, without encroaching on the ground occupied by the soldiers of the war, to be used as a National Government Cemetery for the interment of members of Congress and officers of all services of the United States who may die at the Capital or whose friends may desire for them such a place of sepulture. This subject is worthy of consideration.

A small appropriation is needed for improving the road between the Capitol and Arlington Cemetery, and also one to complete the estimate for construction of a road, already more than half completed by order of Congress, between Vicksburg and the Vicksburg Military Cemetery.

The work of marking the graves in military cemeteries with marble and granite head-stones is practically completed. Contracts have been let for placing marble head-stones on the graves of soldiers who died during the war and were buried in private village and city cemeteries, and whose friends have not been able to do this honor to their memory. The work can hardly be begun before next spring.

SUBSISTENCE DEPARTMENT.

The Commissary-General recommends that the appropriation for subsistence of the Army be made available from the passage of the act making it, in which recommendation I concur.

Supplies, as a rule, are purchased from producers and manufacturers or importers nearest points of consumption, when consistent with a due regard to economy and the procurement of stores of a proper quality.

The purchases of flour in accordance with above rule, the increase in amount, and the improvement of quality produced near posts in Texas, Missouri, Nebraska, New Mexico, Colorado, Wyoming, and Arizona are referred to.

Attention is invited to the fact that the Subsistence Department has not been reimbursed for the value of a large quantity of supplies issued to Indians and transferred to Indian agents, and the Commissary-General states that in his estimates for prisoners of war for the next fiscal year he has included only Indians for the subsistence of whom no other appropriation is made, being of the opinion that Congress does not intend to make double appropriations for the subsistence of Indians.

The Commissary-General renews the recommendation, made in a previous annual report, that section 1144 Revised Statutes be so amended as to authorize the Commissary-General (instead of the Inspectors-General, as now authorized) to designate, with the approval of the Secretary of War, the articles which shall be kept on hand by the Subsistence Department for sale to officers and enlisted men, and that sections 1299 and 1300 be amended accordingly.

He also recommends that sales to company messes be exempted from the proviso of the last Army appropriation act, requiring 10 per centum to be added to all stores and other articles sold to officers and enlisted men. Such stores are, as a rule, purchased from funds received by the companies from the sale of savings of the ration to the Subsistence Department, and as that department pays the companies only the cost of the stores it purchases from them it is thought that it is hardly just to them to charge for supplies sold in lieu of the savings purchased 10 per centum in addition to their cost.

The Commissary-General renews his previous recommendations that cooks and bakers should be specially enlisted, extra pay given them, and schools established for their instruction; invites attention to that portion of report of Board of Officers on Army Cooking which relates to this subject.

The enactment of a law authorizing the Commissary-General to detail such officers of the Subsistence Department as may be necessary to investigate claims not already decided upon by the Commissary-General, or which, having been decided, may be reopened on account of new evidence submitted, is recommended.

MEDICAL DEPARTMENT.

The total number of deaths from all causes reported among the white troops was 266, or 12 per 1,000 of mean strength. Of these, 162, or 7 per 1,000 of strength, died of disease, and 104, or 5 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 142.

The total number of white soldiers reported to have been discharged the service on "surgeon's certificate of disability" was 677, or 31 per 1,000 of mean strength.

The total number of deaths of colored soldiers reported from all causes was 28, or 14 per 1,000 of mean strength. Of these, 15, or 8 per

1,000 of strength, died of disease, and 13, or 6 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 140.

The total number of colored soldiers reported to have been discharged on "surgeon's certificate of disability" was 42, or 22 per 1,000 of mean strength.

I invite the attention of Congress to the facts stated by the Surgeon-General concerning the great increase of the business of his office caused by the recent legislation upon the subject of pensions. The official demands upon the office during the fiscal year for information as to cause of death in case of deceased soldiers and the hospital record of invalids was 22,339, or an increase of 1,265 over the previous year, and greater by 1,954 than the average during nine years previously. Besides this increase of current business, the office was burdened with the arrears of past years, amounting on July 1, 1878, to 16,844 cases. With the additional clerical force which commenced work in May, 1878, the accumulation was rapidly reduced, so that on 26th of July last the number of cases awaiting action had been brought down to 2,744; but since July 1, 1879, a great increase in the number of new cases received has taken place. The average number of new cases, which had been 1,862 monthly during the previous fiscal year, rose during July, 1879, to 2,045, and during the month of August to 4,255. As a consequence, and notwithstanding every effort of which the present clerical force is capable, the number of cases in arrears has rapidly increased. By September 1, 1879, it was 4,651 cases. It is deemed certain that business of this character will continue to increase, and unless a temporary increase of the number of clerks is allowed to meet the emergency, the work of the office must again fall into arrears and greatly delay the adjustment of pension cases.

In the Division of Surgical Records the surgical reports received from medical officers of the Army at posts and with detachments of troops engaged in Indian hostilities were examined, and the cases reported were classified according to the seat or nature of injury or operation. The surgical portion of the Medical and Surgical History of the War was continued, and the descriptive catalogues of the surgical, anatomical, and miscellaneous sections of the Army Medical Museum were completed to include all specimens received during the fiscal year ending June 30, 1879.

The cases of wounds, accidents, and injuries reported in Class V of the monthly reports of sick and wounded numbered 5,308, while the mean strength of the Army was 23,663 men; 117 deaths were occasioned by wounds received in action or other violent causes, a proportion of 4.9 per 1,000 of the mean strength.

PAY DEPARTMENT.

The Paymaster-General recommends that the second section of the act of July 24, 1876, be rescinded, which forbids payment of mileage to

officers for travel "on any railroad on which troops of the United States are entitled to be transported free of charge." This act is described as a hardship toward the officers traveling without troops, deprived thus of reimbursement of actual expenses of traveling (of which mileage is intended to be an average), while he is not in a position to execute or enforce the policy of Congress toward the roads.

He again presents the claims of the annuity scheme, quoting the language of Secretaries Cass and Poinsett in favor of some such system, in their annual reports of 1833 and 1837.

He states that a large share of the most experienced officers appear to be in favor of an increase of pay of non-commissioned staff officers in regiments and of first sergeants of companies, as calculated to improve and elevate the rank and file.

He suggests that while the President now has power to confer brevets for distinguished conduct in the field, he should also have the power, in exceptional cases, of directing payment to be made to an officer according to his brevet rank. This would be especially desirable in reference to an officer commanding a department or an army in the field.

He states that the Freedmen's Bureau, for payment of bounties, &c., to colored soldiers, organized in 1867, and transferred in 1872 to the Adjutant-General, is now in operation in the Pay Department, under the act of March 3, 1879.

REPORT OF THE CHIEF OF ENGINEERS.

The report of the Chief of Engineers states that work upon our sea-coast defenses has been limited, in accordance with the terms of the act of March 23, 1878, to their protection, preservation, and repair. For the reason that these works are subject, more than any other national structures, with the exception, perhaps, of light-houses, to the destructive and deteriorating effects of the sea, the amount heretofore appropriated for these objects has proved insufficient, many necessary works of repair and protection remaining unexecuted at the close of the last fiscal year for want of funds.

No progress whatever has been made for several years past in the construction of new or in the modification of our old works, built before the inventions of modern ordnance and armored ships, for want of appropriations therefor; but the Engineer Department of the Army, in the light of full information respecting the recent great improvements in ordnance and armor, has prepared plans for modifying some of our old works and constructing new ones. These plans provide for mounting the heaviest of modern rifled guns and resisting the projectiles of cannon of the immense calibers now possessed by nearly every maritime nation of Europe.

The Chief of Engineers very truly remarks that, in the present condition of our sea-coast defenses, injuries to our citizens abroad and

insults to our flag could not be resented with that vigor and promptitude demanded by the honor and dignity of the nation, and justified by a knowledge that, come what may, our navy-yards, maritime cities, and depots for military and naval stores will be unassailable behind impregnable fortifications and obstructions; and I commend the views of that officer respecting the necessity for reasonable appropriations for our sea-coast defenses, as expressed in his report, to the earnest attention of Congress and the country.

The Battalion of Engineers stationed at the Engineer School of Application at Willets Point and at the Military Academy has been engaged in the development of our torpedo system, which has now been brought to a state of efficiency not inferior, it is believed, to that of any nation.

Fortifications and torpedoes, or submarine mines, have, in recent years, become the twin defenses of maritime countries, the latter being necessary to hold the enemy's vessels under the fire of the former in the approaches to our harbors; and I believe it is simply a matter of common prudence and good judgment that the appropriations asked for by the Chief of Engineers for providing torpedoes to be stored in our fortifications, from which they can be planted in time of war in the channels and fair-ways of our harbors, and for preparing our most important forts for operating them by providing the necessary bomb-proof covers for the electrical apparatus, galleries of approach, &c., be granted; also that, for the reasons stated by the Chief of Engineers, the means should be provided for increasing the Battalion of Engineers from the number now fixed at two hundred enlisted men, under the recent law reducing the Army, to five hundred and twenty enlisted men.

The construction, repair, preservation, and completion of certain public works on rivers and harbors, and the surveys and examinations connected therewith, have been prosecuted during the fiscal year ending June 30, 1879, with the means provided by the river and harbor act approved June 18, 1878, and the balances of previous appropriations remaining unexpended on July 1, 1878.

The execution of all works provided for in the river and harbor act approved March 3, 1879, for which the plans and projects have been approved, is being proceeded with. In the case of new works unavoidable delays have in some instances arisen from the necessity of considering legal questions touching the occupancy of their sites. For further information respecting these improvements and surveys reference may be made to the report of the Chief of Engineers, which contains a detailed account of the steps taken to carry out the provisions of the river and harbor acts and of the satisfactory progress and condition of these works. Although many of them are only partially completed, they have afforded an increased security and facility to navigation far exceeding in value the sums expended upon them, adding annually to the wealth and resources of the country by an increase of commerce,

at the South Pass of the Mississippi River, June 2, 1875. The object was to open and permanently maintain a navigable channel, 26 feet deep, through then existing extensive shoals and bars which were underlying about 7½ feet of water, and which, as obstacles to navigation, rendered this pass useless to commerce.

Under an act of March 3, 1875, authorizing the undertaking, Mr. Eads and associates were to receive certain payments as the improvement progressed toward the creation of the channel sought and required to be secured within a specified time, and they were to receive periodical payments for twenty years for its maintenance, with a view to insuring permanency of the improvement. The progress of the work has been the subject-matter of several reports during each year from an engineer officer on duty at Port Eads, and has been duly communicated to Congress.

In accordance with the provisions of the act of March 3, 1875, and amendatory acts, payments for the work have been made on requisitions dated as follows: January 20, 1877, \$500,000; January 10, 1878, \$500,000; June 21, 1878, \$500,000; between October 5, 1878, and February 17, 1879, \$216,882.06; March 7, 1879, \$750,000; between March 14 and May 15, 1879, \$214,251.27; May 29, 1879, \$500,000; June 26, 1879, \$68,886.67; July 3, 1879, \$500,000, and July 23, 1879, \$500,000; total, \$4,250,000. The half million of dollars last allowed concluded the payments authorized for *creating* the channel required by law.

The first grand stage of this important work was reached July 8, 1879, and from that date began a second undertaking relative to *maintenance* of the channel, which, if accomplished, entitles Mr. Eads and associates to \$100,000 per annum, payable in equal quarterly installments. The first quarterly payment has been demanded, and is under consideration on a certificate recently received from the engineer officer setting forth "that the maintenance, by James B. Eads and his associates, of a channel through the jetties at the mouth of South Pass, Mississippi River, twenty-six feet in depth, and not less than two hundred feet in width at the bottom, and having through it a central depth of thirty feet, without regard to width, has been accomplished from July 8 to October 8, 1879, with the exception of twenty days, when a failure in some part to maintain such a channel occurred. The failure was on the 14th, 15th, 16th, and 17th of August for the first period, and from August 27th to September 11th, inclusive, for the second period. During the whole of the interval from July 8 to October 8, 1879, a navigable channel having a greater depth than twenty-six feet has been maintained at the head of South Pass, and throughout that interval of time the twenty-six feet channel has been, at all times and in all places, here, at least one hundred and ninety feet wide."

The Attorney-General has been requested to render an opinion on several questions as to the proper construction of certain provisions of the law materially bearing upon the claim for payment. If the opinion

pending shall be favorable to Mr. Eads and associates, then the first quarterly payment for maintenance may be made.

Should the full channel be maintained within the meaning of the law for a period of six months from July 8 last, then Mr. Eads and associates will doubtless demand a first semi-annual payment of interest at five per centum per annum on the \$1,000,000 referred to in the acts of March 3, 1875 and 1879. The demand on this account will be duly considered as of course when presented for adjustment.

Besides other works connected with the creation and maintenance of the channel during the past year, the jetties at the mouth of South Pass have been capped with stone over their lower ends; additions have been made to the submerged dam in the pass, and over 4,000 feet of mattress walls, substantially new, have been constructed. The works established at the head of the pass, in order to increase the flow of water through South Pass, have been considerably extended and enlarged. The year has been signalized by a greater measure of success in the attainment of results than any other year since the inauguration of the works. The only problems in connection with the improvements, from an engineering point of view, remaining to be answered in the future, are those involved with the successful and continuous maintenance of the channel already obtained.

REPORT OF THE CHIEF OF ORDNANCE.

Under the various laws of the United States, the Ordnance Department provides arms and munitions of war for the whole military establishment, and has charge of the armories, arsenals, and other ordnance establishments for their manufacture, repairs, and storage. Thus, at the present time, the department is providing ordnance and ordnance stores for the sea-coast fortifications, the whole body of the militia, the Military Academy and the Artillery School, and the Regular Army, in the military establishment, and to the Treasury, Post-Office, and Interior Departments, and the Fish Commission, the Marine Corps, and the thirty colleges authorized by section 1225, Revised Statutes. In addition to this work, it is charged with other important duties in connection therewith not now necessary to enumerate.

The construction of the new buildings at Rock Island Arsenal has progressed in a satisfactory manner, and with the aid of the new appropriations asked for, the workshops will soon be in a condition to receive their machinery and commence manufacturing to meet the future wants of the country.

The convictions of the Chief of Ordnance as to the soundness of the policy of extending governmental support to and thereby actually keeping in existence the only establishments in the country organized and fitted to fabricate heavy ordnance, are felt by me, and are deepened by a fuller consciousness of how inadequately we are provided in this respect for even common emergencies. This, taken in connection with

the fact that our present sea-coast armaments (principally composed of smooth-bores) are almost useless for coping with the heavy artillery of the present, leads me again to urgently recommend that Congress consider the granting of liberal appropriations for our national defenses, as a matter of the first importance.

The important tests of the 8-inch breech-loading rifle, converted from a 10-inch smooth-bore gun, are still in progress, and up to date 202 rounds (190 with full battering charges) have been successfully completed. The endurance, so far, has proved satisfactory, and no evidences of want of endurance in its special construction have been, so far, afforded; and there are good grounds for the opinion that it will stand its thorough proof, and establish the fact that we can convert, after this system, our original smooth-bore cast-iron guns into breech-loaders, or produce original breech-loading cannon of the heaviest construction, using in a short time wholly the products of our own founderies and other manufacturing establishments.

Previous allusion has been made to the decided advantages to be derived from the use of breech-loading rifles, especially in casemated works. Since then the unfortunate disaster on board of the *Thunderer* (the bursting of a 38-ton muzzle-loading gun by the accidental insertion of two charges, impossible to occur in breech-loaders), and the unexcelled results (in power, accuracy, and successful manipulation) recently attained at Meppen, by Herr Krupp, in the trials of his breech-loading guns of 70 and 18 tons, have led to the conviction that it is highly probable that the general introduction of breech-loading instead of muzzle-loading cannon in the armaments of Europe, for all heavy ordnance especially, is a mere matter of time.

During the last fiscal year there were manufactured at the National Armory 20,005 Springfield rifles, and, under the law authorizing it, 1,000 of the experimental Hotchkiss magazine rifles. The former have been produced at a much less cost than heretofore, owing to the increased number manufactured and the improvement of the plant employed; and as there is now available a larger appropriation than usual for the present year, it is confidently expected that the cost will yet be further reduced in the future. There were in store on July 1, 1879, only 22,073 rifles and 5,406 carbines at the armory and arsenals, a wretchedly small number, considering the wants of the present and the calls that may be made in the future.

The Hotchkiss arms are now in the hands of the Regular Army for trial in actual service, and upon the reports to be made bimonthly will depend any recommendations for the supply to be hereafter manufactured. But whether this magazine gun is to be the arm of the future or not, it is not safe to delay providing an ample supply of the Springfield rifles.

The Ordnance Department has now in its possession, set up at the Watertown Arsenal, the finest machine in the world for testing the

strength of metals and other materials, and a small annual appropriation is asked to enable the department to use it. This machine was authorized by Congress, and constructed under the immediate supervision of the late United States board to test iron, steel, &c. Valuable results have already been obtained from its limited use, under circumstances very unfavorable, and it is suggested that a wise policy and a just appreciation of the advantages to inure to the various industries of the country will prompt the Congress to grant the small amount of money necessary to develop its capacities.

The work already accomplished has enlisted the active sympathy of scientific men of all classes and metal manufacturers and users, who have not limited their expressions of approval, but have supplemented them with funds to finish work which was commenced but could not be finished owing to the failure of Congress to appropriate the whole sum needed.

REPORT OF THE CHIEF SIGNAL OFFICER.

The Chief Signal Officer reports that the established course of drill and instruction in military signaling and telegraphy, meteorology and the Signal Service duties at stations of observation and report, together with the drills of the Signal Corps with arms, has continued at the School of Instruction and Practice at Fort Whipple, Va. The apparatus needed for the study and exercises, with instruments; for practice in the meteorological duties at stations of observation; the equipment for the drill in field signaling; the drill with the field telegraph train; the construction drill for permanent telegraph lines; and the duties on signal and telegraphic stations, is full and has been improved by useful additions.

The officers of the Signal Service pass the course of drill and instruction, and serve regularly at the post of Fort Whipple before being put upon any other duty. There have been instructed during the year 122 men as assistant observers and 9 for promotion to the grade of sergeant.

The whole active force of the Signal Corps, officers and enlisted men, is practiced, at this post, in the general drills with arms and with telegraphic equipments. The drills occur regularly and embrace all at the post or serving in Washington, sufficiently near to enable them to have the benefit of the practice.

The office files are crowded with applications for enlistment. The severe examinations are successfully undergone. The clause providing "that two sergeants may in each year be appointed to be second lieutenants" gives, by assurance of permanent service and promised reward, that *stimulus* to exertion so long and earnestly sought for. Until the results of this organization, up to this time so satisfactory, have been more fully tested, it is not advisable that changes be attempted.

One hundred and seventy stations have been maintained during the year to fill the system of stations of observation from which reports are

deemed necessary to enable proper warnings to be given of the approach and force of storms, and of other meteoric changes, for the benefit of agricultural and commercial interests.

Twenty-five stations of a second class, hitherto described as "Sunset stations," at which a single observation is taken, daily, at the time of sunset, by citizens employed for this purpose, have been continued in operation.

The daily exchange of telegraphic reports, had by comity of exchange with the chief meteorological office of the Dominion of Canada, has been continued, and warnings have been regularly sent from this office to enable signals to be displayed at the ports of the Dominion at times of threatened danger.

The issue for publication of the official deductions or forecasts had at the office of the Chief Signal Officer, and known as the Synopsis and Indications, has continued during the year. There has been no failure of the delivery of any report to the press during that period. The total number of the reports thus furnished at the hours of 1 a. m., 10.30 a. m., and 7.30 p. m., daily, has been 1,095.

The wide diffusion given these reports may be judged from the fact that they appear daily in almost every newspaper in the United States. When the forecasts or indications thus published are examined in reference to accuracy of preannouncement of the state of the weather only (not the forestating, as is the custom, the changes of the barometer, thermometer, and average wind-direction to happen), the average percentage of accuracy is found to be 90.7 per cent. verified. A minute analysis of the same forecast and a careful comparison with the weather and the instrumental changes above referred to, afterward occurring within the time and within the district to which each forecast has had reference, has given an average percentage of accuracy of 86.6 per cent. An average of 90 per cent. to follow this comparison is also believed to be attainable.

A telegraphic weather-map charted at this office at the hour for the morning report and rapidly telegraphed, by a process peculiar to the service, to New York, in time to appear in the lines of the charting in the paper going to press at 11.30 a. m., has been devised and is in daily use.

The display of cautionary day and night signals, by flags and lights, upon the lakes and the great ports of the United States upon the Atlantic and Gulf coasts, has been made systematically on occasions of supposed especial danger at ninety-four different sea and lake ports and cities. There were added on January 1, 1878, to the display of day and night signals at the ports which had been "Cautionary" alone up to that date, the display by day or at night of the "Cautionary Off-shore Signal," indicating that while winds might be high and there might be danger, the winds to follow were expected to blow "off-shore." It is of important utility in the management and for the safety of vessels to be

thus preadvised as to coming winds. The adoption of this signal, first made, so far as is known, at the ports of the United States, has much increased the usefulness of the service. Of the total number of cautionary signals thus displayed, 80.1 per cent. have afterwards been reported as justified. In the cases reported as failures of justification following the display, the wind did not attain, at the place of display, a violence held to justify it. No great storm has swept over any considerable number of the ports of the United States without preannouncement.

The plan of "Display Stations," referred to in the last annual report, has continued in operation. These stations are subordinate stations, located at the smaller lake or sea ports, and are classed several together in sections, each section being under the immediate supervision of a sergeant of the Signal Corps, located at a named station at some neighboring principal port to exhibit its storm-warnings. The power of displaying the warning signals will, with little added expense, more than double under this system.

The exhibition of symbol maps, on which the meteoric condition is shown by symbol at the rooms of the boards of trade, chambers of commerce, and of other commercial associations, and at places of public resort, for the benefit of shipping and other interests, the display of bulletins, the distribution of weather maps, and the employment of other methods for rapidly diffusing for public use the information had at this office, have been continued.

By an arrangement with the Post-Office Department, 6,142 printed "Farmers' Bulletins," on which appear daily the forecasts of this office, have been distributed and displayed in frames daily at as many different post-offices in different cities, villages, and hamlets in different States, for the use of the agricultural population throughout the United States.

A "Weather Case or Farmers' Weather Indicator," an instrument arranged to exhibit together on a simple plan the meteorological indications of several instruments, and in such way that they can be easily noted by any one, is in preparation for general issue.

Since the date of the last annual report, a Railway Bulletin Service, on railways, has been established in co-operation with this office. The different railway companies receive at the time of the midnight report and by telegraph a copy of the report, which is distributed under supervision of the superintendents of the railway telegraphs, to designated stations along the lines.

The river reports, giving the average depth of water of the different great rivers of the interior, and notice of dangerous rises, for the benefit of river commerce and the population in the vicinity, have been regularly made, telegraphed, bulletined in frames, and published by the press at the different river ports and cities. River stations have been opened during the year on the principal California rivers.

A circular issued on March 15, 1875, showing the range between high

and low water marks on the western rivers, and the height at which the river rises became dangerous along their banks, is believed to have been the first systematic attempt to establish a "danger line" on these rivers. This circular was prepared from *data* collected at this office, and was given by order of the Secretary of War a wide circulation through the press and otherwise.

A series of canal reports, announcing temperatures probable to affect the canal commerce, were issued during the season of closing navigation at the commencement of the last winter, for the uses of canal commerce in the several States and the interests depending thereon.

The regular daily publication of the reports by the press, now continued for nine years without cost to the United States, is considered as an evidence of the usefulness of the reports and of the favor with which they are received by the communities for which they are intended.

The office publications, the Weekly Weather Chronicle and the Monthly Weather Review, have been regularly issued during the year. A number of valuable charts have been prepared.

By authority of the War Department, and with the courteous co-operation of scientists and chiefs of meteorological services representing the different countries, a record of observations taken daily, simultaneously with the observations taken throughout the United States and the adjacent islands, is exchanged semi-monthly. These reports are to cover the territorial extent of Algiers, Austria, Belgium, Great Britain, China, Central America, Denmark, France, Germany, Greece, India, Italy, Japan, Mexico, The Netherlands, Norway, Portugal, Russia, Spain, Sweden, Switzerland, Turkey, British North America, the United States, Sandwich Islands, West Indies, and South America.

On July 1, 1875, the daily issue of a printed bulletin, exhibiting these international simultaneous reports, was commenced at this office, and has been since maintained.

On July 1, 1878, the first issue of an international weather map, issued daily and embracing the whole northern hemisphere, was commenced at this office. The issue of such a map, thus first issued in the United States, is without a precedent in history. The studies it makes possible must lead to important results in matters relating to international meteorology, and possibly to the international exchange of data on which "warnings" may be based in distant countries. Additional weather maps of the northern hemisphere, tracing storm tracks upon the oceans and exhibiting meteorological conditions by months, have been issued during the present year.

The sea-coast service of the Signal Service, in connection with the Life-Saving Service, has been continued during the year.

A code of danger or distress signals, to be furnished without cost to all vessels sailing from the ports of the United States, and enabling them to communicate by flags with stations or relief parties on the shore in case of need, disaster, or distress, is widely distributed.

In pursuance of the acts of Congress authorizing the construction and operation of telegraphic lines in the interior and upon the frontier, for connecting military posts and stations, and for the protection of the populations from Indian and other depredations, officers and enlisted men of the Signal Corps have been continued upon these duties. The lines in Arizona, New Mexico, and upon the Texan frontier, are nearly completed. The lines in the Northwest, for which provision is made, are pushed rapidly forward. The work of construction has been in large part done by working parties furnished by the active co-operation of department commanders. A total length of 4,467 miles of line, including 543 miles on the sea-coast, was in operation and maintained in the care of officers and enlisted men of the Signal Corps, June 30, 1879.

The lines carried into a country held before these lines were built to be impracticable for such constructions, and maintained in regions and with circumstances as difficult for such operations, perhaps, as any in the world, have been successfully worked as compared with lines under other management and at all similarly circumstanced. The lines have proven of very great value in Indian wars.

The Chief Signal-Officer recommends that there be just provision, by legislation, for the permanent employment and grades of the officers of the corps. The increase of the enlisted force of the corps is recommended as a measure of economy. It is hoped there may be no failure in the appropriation for the service of the amounts estimated for the ensuing year; they have been estimated with careful economy.

THE MILITARY ACADEMY.

I transmit herewith the annual report of the Board of Visitors of the Military Academy at West Point, and invite attention to their recommendations.

It appears that the enlargement and improvement of the cadet barracks is demanded by considerations both of health and of comfort, and it is accordingly recommended.

The Superintendent, Major-General Schofield, reports that it is very important to provide suitable accommodations at West Point for the Board of Visitors and other prominent persons who visit the Academy officially during the annual examination in June. The small hotel situated on the plain is the property of the post fund, the United States having contributed nothing towards its erection. It was designed for the accommodation of the parents and friends of cadets visiting West Point, and of officers transiently at the post. During the commencement season it is wholly occupied by the Board of Visitors and other officials, greatly to the discomfort of all other guests, mainly the parents and friends of the cadets, for whose accommodation the hotel was especially intended.

I concur with General Schofield in recommending an appropriation for the erection of a cottage, adjacent to the hotel, for the use of the

Board of Visitors and other official visitors to the Academy. It is believed that \$10,000 would be a sufficient sum for the purpose.

LEAVENWORTH MILITARY PRISON.

The annual reports from the Leavenworth Military Prison indicate a very satisfactory progress and condition. The labor of the prisoners has been utilized, as far as possible, in manufacture of articles needed for the use of the Army. Extensions have been made to the buildings, and alterations of buildings already in use have been made to adapt them to the better occupancy, both for health and labor. Prisoners have been employed largely in mechanical labor, partly in the work of building the prison wall, but chiefly in the manufacture of shoes, tent pins, and barrack chairs for the Army. The number is reported as follows: 8,530 chairs, 40,000 tent pins, and 51,756 pairs of shoes. The manufacture of boots has only been recently commenced, because of contracts previously made with private manufacturers. The prison farm now contains about fifty acres, all but seven of which have been cleared, fenced, and is cultivated by prisoners' labor. Particular attention has been given to sanitary measures, diet of prisoners, &c., and the report of the prison surgeon shows but three deaths in the year out of a monthly average strength of 327 men.

The governor of the prison makes satisfactory report in relation to the conduct of the prisoners, having but seldom to resort to any severe discipline. This is attested also by the fact that all but an exceedingly small percentage of prisoners secure their release sooner than the expiration of their full term, by earning an abatement under a regulation which allows five days' reduction for each month of good conduct.

The duties required of the officers of the prison are exacting, and the manner of their performance is worthy of commendation.

It is hoped that legislation, which was asked last winter, may be secured at the coming session of Congress to authorize the use of the earnings of prisoners and receipts for the sale of manufactured articles toward the maintenance of the prison.

GEO. W. McCRARY,
Secretary of War.

PAPERS

ACCOMPANYING

REPORT OF THE SECRETARY OF WAR.

REPORT OF THE GENERAL OF THE ARMY.

HEADQUARTERS OF THE ARMY,
Washington, D. C., November 1, 1890

I have the honor to submit this, my annual report for the past months, and will preface it as usual by the following statement and returns, compiled by the Adjutant-General, showing the organization of the Regular Army."

General return or exhibit of actual strength of the Regular Army.

Distribution of troops in the Military Division of the Mississippi, the Departments of the Missouri, Texas, Platte, and Arkansas.

Military Division of the Atlantic, comprehending the Departments of the East and South.

Military Division of the Pacific, comprehending the Departments of the Columbia, and Arizona.

Department of West Point.

This of Table B will show that the Army at present is composed of the following:

Officers.	
Generals.....	11
Brigade-Generals.....	17
Colonels.....	6
Regimental Adjutants.....	9
Major-Generals.....	60
Adjutants-General.....	26
Assistants.....	179
Quartermasters.....	54
Surgeons.....	110
Medical Assistants.....	63
Pharmacians.....	3
Chaplains.....	29
Staff.....	556
Regimental Adjutants of cavalry.....	430
Regimental Adjutants of artillery.....	278
Regimental Adjutants of infantry.....	851
Total.....	1,559
Regimental Adjutants.....	1
Regimental Adjutants of posts.....	
Regimental Adjutants of posts.....	
Regimental Adjutants.....	
Regimental Adjutants and recruits unassigned.....	
Fort Leavenworth.....	
Regimental Adjutants.....	
Regimental Adjutants.....	1
Regimental Adjutants.....	2,127
Regimental Adjutants, 24 musicians, 8 professors, and 212 cadets. Retired, 388	

The 11 generals, 1,559 officers, 20,566 men, and 233 Indian scouts, with such of the officers of the general staff as are assigned by the War Department to duty with the troops, constitute the Army proper, or the "combatant force." All other parts of the military establishment are provided by law for special service more or less connected with the Army or militia, but are not available for frontier defense; as for instance, the 397 enlisted men of ordnance are in fact workmen at the arsenals; the 192 men of engineers are at Willets Point undergoing instruction in torpedo-practice, and are not subject to the division commander; the 456 men of the Signal Corps are employed in observing the weather or in working telegraphs; the 114 ordnance-sergeants have charge of old forts or fixed magazines; the 151 commissary-sergeants are in charge of stores; 187 are stewards of hospitals; the West Point detachment—186—is localized at the Military Academy; 70 men comprise a prison-guard at Fort Leavenworth, and the recruiting detachments—1,710—are at David's Island, Columbus, Ohio, and Jefferson Barracks, Mo. These various detachments, aggregating 3,463 enlisted men of the highest grades, compose about one-sixth part of the enlisted men provided by law for the whole Army, leaving but 20,799 for actual service. I mention these figures in some detail, because I know that it is the popular belief, shared in by many members of Congress, that we have 25,000 men for duty. I have done all in my power to reduce these detachments to the lowest number possible, so as to afford more men to our skeleton companies, but have found it impossible, and I notice that similar detachments are reported on all Army returns for fifty years back.

There are 430 companies in the Regular Army; 25,000 men would give 58 to each, which is as small as any company should be, and I earnestly recommend that you ask Congress to so legislate that the 25,000 men provided by law may be allowed exclusively for the regiments of the line, and that special provision be made for these several detachments, as has already been done for the Signal Service. The Army cannot, with justice, be held responsible for the work of 25,000 men, when so large a fraction is necessarily diverted to other uses, it may be of equal national importance.

Tables C, D, E, and F show how these troops are distributed for service. The whole territory of the United States is divided into nine departments, and these departments are grouped into three grand military divisions, commanded by Lieutenant-General Sheridan, Major-General Hancock, and Major-General McDowell.

West Point constitutes a distinct department, commanded by Major-General Schofield.

In order to show the vast amount of labor and service performed by officers and men, I herewith submit full reports by all the division and department commanders, with such subordinate reports as seem necessary to a full understanding of the condition of the troops and the history of events during the past year. These are so full and interesting that I might safely leave each commander to state his own case, but in order to give emphasis to certain recommendations by department and division commanders, I am forced to refer to some of the events in partial detail.

In May last General Terry, commanding the Department of Dakota, reported that Indians from Sitting Bull's camp beyond the northern national boundary had followed the buffalo south and were likely to create disorder and commit acts of hostility against Indians and others belonging on our side, and that he knew of no way to put a stop to this

advance other than by organizing a strong column at Fort Keogh, clearing the country, and then establishing a summer camp of moderate size at Poplar Creek Agency, on the Missouri River, but that under existing orders he did not feel justified in adopting this course, and asked for instructions. He was promptly notified that there was no objection to temporary operations and a temporary cantonment, but that we were not prepared to build any permanent post in that quarter, other than Fort Assiniboine, for which Congress had made an appropriation. General Terry committed this task to Colonel Nelson A. Miles, commanding District of the Yellowstone, to whose report, and to that of General Terry himself, I refer for full details of the whole expedition. It accomplished all that was designed, and resulted in the withdrawal north of the boundary of all hostile Indians, and a better understanding with the Dominion authorities who have charge of the Canadian Indians. Nevertheless, we know that a large body of Indians do yet remain in Canada near our border, many of whom are hostile Sioux, whose relatives are with Red Cloud and Spotted Tail on their reservation; that the buffalo on which they mainly subsist are fast disappearing, and that want and hunger will soon compel them to depredate for food on our Indians or on our people; and that some more permanent security must be found than results from the good will of our neighbors. The country north of the Missouri River from Fort Buford to Assiniboine, "a distance of 250 miles as the crow flies," is perfectly open to such incursions, and General Terry advises that a new, strong, and permanent military post be built near the national boundary between these two points, and asks therefor the sum of \$200,000. He also asks for an additional \$100,000 to complete Assiniboine. These two posts will be on or near the national boundary, and will continue for a long while, if not forever, our extreme northern line of defense, and therefore such structures should be made of stone or brick.

It is only four years since the Yellowstone was the northern defensive line, was infested by the most warlike Indians of the continent, and Congress provided for the building of two new posts thereon, viz, Keogh and Custer. As usual, the building of these posts or places of security has resulted in the rapid settlement of the whole line from Bismarck westward; so that, at the same rate of progress, in two or three years this line of travel, like that along the Platte, will be able to take care of itself, and Keogh and Custer may be abandoned. Then we will have to move the troops northward; and probably it is wiser to jump to this conclusion and to take post at once along the national boundary, in which event the post referred to by General Terry will be absolutely necessary. I therefore recommend that Congress be asked to appropriate \$100,000 to complete Fort Assiniboine, and \$200,000 to build a new post near Wood Mountain, at some point near the 107th parallel west of Greenwich, the exact spot to be afterward determined by careful exploration, and that the appropriation be made available for two years.

In this connection I also beg to submit my conviction that very soon the progress of events will make it absolutely necessary to remove all the Indians now located on the Upper Missouri, viz, Arickarees, Gros Ventres, Piegans, Bloods, and Crows, to the Sioux Reservation below Cannon Ball Creek, and to open up for actual settlers all the land in the region north and west of that reservation.

KANSAS BORDER TROUBLES.

The Indian Territory, south of Kansas and west of Arkansas, is by far the most valuable body of land now reserved for the sole use and occu-

pation of any of the Indian tribes. As early as April, 1879, certain designing parties put in circulation a report that the surplus land would soon be opened by Congress to settlement, and emigrants at once began to cross over and stake out "claims."

The President issued his proclamation of April 26, 1879, and gave orders that the military authorities should respond to the call of the rightful civil agents, who were required to remove all intruders or trespassers by force if necessary, also to protect the Indians in the full and free enjoyment of all parts of that Territory. This most delicate duty has been admirably performed by the troops under the orders of General Pope, to whose report I refer for fuller details, and I now only allude to the subject to illustrate how military posts result from temporary and local causes. Small detachments have all summer been distributed and are yet posted along the southern border of Kansas in tents, but as winter comes on the officers in command will naturally construct huts and houses, which will, unless the cause be soon removed, result in a greater number of the small posts which already add so much to the cost of the Army. Many of these posts, not only in Kansas, but throughout the West, along our northern border, and on the Atlantic and Gulf seaboard, which were absolutely necessary in their day, are now more than useless. All of them contain, however, more or less public property which must be guarded and accounted for by existing laws. These small posts could be abandoned to great advantage to the military and in the interest of economy. Congress alone can dispose of any land or buildings once reduced to possession, and I am aware that the Secretary of War is powerless in the premises, yet I trust he will ask of Congress the necessary authority to sell all superfluous posts, under such restrictions as it may impose. I believe that out of the great number of forts and military posts now garrisoned or in the custody of ordnance sergeants about thirty might be sold to great advantage. By diminishing the number of such posts we can collect our troops in larger garrisons at essential strategic points, increasing their efficiency and usefulness, and thereby will avoid the cost of repairs to buildings of no military value whatever. I have heretofore reported the names of several such forts and military posts, and will be ready at any moment to increase the list whenever called on to do so.

AFFAIRS IN TEXAS.

The report of General Ord shows a most satisfactory condition of affairs in that department, especially along the Rio Grande frontier. The troops have been most active in counteracting the effects of raids made by small bands of thieving Indians and vagabonds from Mexico, and from the direction of New Mexico; have created a comparative freedom from danger which has become habitual in that quarter of our country for two or three years, and have thereby aided materially in stimulating the great prosperity which now prevails in Texas. A large immigration has poured into that State, filling up her waste lands, and as a consequence settlements have overrun Forts Richardson and Griffin, and compelled the removal of the frontier further west. General Ord now asks a specific appropriation for a post on the line between Forts Concho and Elliott to give increased security to the very large and growing trade in cattle driven from Texas by this route to the railroad at Fort Dodge. I am aware that Congress regards these new posts as extravagant; but each one repays a hundred-fold its cost by increased security and increased national wealth. I therefore recommend the appropriation of \$60,000 for this projected post. If Forts Griffin and

Richardson (which this new post is designed to replace) could be sold, the proceeds would go far toward building the new one; but the law compels all moneys received by sales of any kind to go to the miscellaneous receipts of the Treasury, and no permanent military structures can be erected without a specific appropriation by Congress.

I also recommend that a further appropriation of \$100,000 be made for new buildings at existing military stations in Texas, to be disbursed under the direction of the chief quartermaster of the department, and subject to the orders of the department commander.

Heretofore, about one-fifth of the effective force of the whole Army has been stationed in Texas, but recently General Sheridan was forced to draw from Fort Clark Colonel Mackenzie and the six companies of the Fourth Cavalry stationed there, in order to make up the force now at Fort Garland, which was imperatively demanded for service in the Ute country.

There still remain in Texas two full regiments of cavalry, four of infantry, and four companies of artillery, which will be maintained to the maximum of strength, and by activity will make up for want of numbers. I trust the authorities of Texas will appreciate the necessity for troops elsewhere, and believe that all in the military service are laboring to perpetuate the improved condition of affairs which seems to have given both satisfaction and prosperity.

THE UTES AND APACHES.

The Indians known as "Utes," from which Utah takes its name, was applied to all the nomads west of the Rocky Mountains as far as Nevada, and south into New Mexico and Arizona. Gradually they have been surrounded by white settlements and broken up into many distinct bands, the four principal of which are located as follows: The Uintahs in Northeast Utah, estimated at 430 souls; the Los Pinos in the Uncompahgre Valley, Colorado, estimated at 2,000 souls; the Southern Utes in Southwest Colorado, with 934 souls, and the White River Utes in Northwest Colorado, estimated at 800 souls. To such as desire to study the nature of recent events in that quarter I refer to the reports of the agents of these separate bands, which will be found on pages 622, 510, 512, and 514 of Part I of the Report of the Secretary of the Interior for the year 1878; and for a more complete description of the Indians themselves and the country they inhabit, I beg to refer to a most interesting report made by Lieutenant McCauley, Third Cavalry, of October 15, 1878, published at length in Senate Ex. Doc. No. 62, third session, Forty-fifth Congress, and to Hayden's maps of Colorado. Suffice it now for me to say that these Indians are of the worst class, and occupy the roughest part of our country for farming, grazing, or for military operations. Their management is complicated by the fact that their country is known to possess mineral deposits, which attract a bold and adventurous class of white men. They are very warlike, and have no difficulty in procuring, in exchange for their deer-skins, horses, and sheep, any amount of the best rifles and ammunition. In former years they used to come east of the Rocky Mountains to hunt buffalo, but of late years they have confined their hunting to the bear, elk, and deer of the mountain region. As long as game lasts they will not work or attempt farming, except in the smallest and most ridiculous way, and that only by compulsion.

Mr. Meeker, the Indian agent at White River, has had occasion frequently to address complaints to the Commissioner of Indian Affairs, to

the governor of Colorado, and the commanding officer of the nearest military post (Fort Steele) to the effect that the Indians of his agency would not remain on their reservation, and were engaged in burning forests, &c. On the 8th of July last he complained to Governor Pitkin that Major Thornburgh paid no attention to his appeals, and that a military force was needed immediately to bring wandering Indians back to the agency and to stop their destruction of timber. This was communicated the same day to General Sheridan, with instructions to take such measures as would accomplish the wishes of the Interior Department. Fort Steele is distant about a hundred and fifty miles from this agency, and had a comparatively small garrison, which was utterly inadequate to such requisitions. On the 18th and 28th of July the Secretary of the Interior transmitted to the War Department similar requests, which were referred "for report" through General Sheridan to General Crook, commanding the Department of the Platte, including Fort Steele. General Crook made report that the Indians complained of, besides killing the game, had committed no depredations; that the post commander, Major Thornburgh, did not receive timely notice of the presence of the Indians, and that it was impossible for the military placed at such a great distance from the agency to prevent the Indians leaving without authority, unless warned in due time by the Indian authorities; that unless troops are stationed at the agencies they cannot know in time when Indians are absent by authority, nor can they prevent the occurrence of troubles for which they are frequently and most unjustly held responsible.

On the 2d of September the Secretary of the Interior transmitted a copy of a report from Mr. Meeker, asking for a military force at the agency; and again on the 15th of September the agent reported that he had been assaulted by Johnson, a leading chief; that his life and the line of his family were not safe, and that he wanted protection immediately. Orders went forthwith to General Sheridan to cause assistance to go to him from the nearest military post. The agency is in Colorado, therefore within the Department of the Missouri, commanded by General Pope, whereas the nearest post was Fort Steele, on the Union Pacific Railroad, in the Department of the Platte, commanded by General Crook. Some delay may have been occasioned by this fact, also by the fact that Mr. Meeker had before only asked that the Indians should be driven back to their agency and prevented from burning timber hundreds of miles away from Fort Steele, and had not until September 15 manifested any special apprehension of personal danger.

These complaints are almost of daily occurrence at the various agencies, and an army of a hundred thousand men would not suffice to respond to all the calls for help, in illustration of which I will mention that within two days an alarm has been sounded from Bayfield, on Lake Superior, by an Indian agent alarmed for the Chippewas, who have been peaceful for thirty years. At that date (September 15) General Pope had a company of the Ninth Cavalry at Sulphur Springs, Middle Park, Colorado, under Captain Dodge, whom he had ordered to the White River agency to "settle matters." About this time much correspondence passed between General Pope, General Sheridan, and myself, in which General Sheridan reported that four companies were already *en route* for the White River Agency from General Crook's department, by reason of the fact that this agency was easier reached from that direction than from General Pope's department, and that he (General Pope) need not take any action in reference thereto. General Sheridan recommended "no action in so far as the military are concerned, except

simply to quell the existing disturbances, and then to await such final decision as may seem best by the Indian Bureau."

The orders to Major Thornburgh, commanding Fort Steele, were made by General Crook, based on indorsements from Army headquarters, and were dated September 16, 1879, "to move with a sufficient number of troops to the White River Ute Agency, Colorado, under special instructions."

Major Thornburgh moved from Fort Steele, September 21, 1879, with the effective strength of three companies of cavalry and one of infantry, about two hundred men, with rations for thirty days and forage for fifteen days; a force which was considered by everybody as sufficient for the purpose. Mr. Meeker had only asked for one hundred men. Major Thornburgh reported back from a camp on Bear River, under date of September 26, that he had met some Ute chiefs who seemed friendly, and promised to go with him to the agency. "They say they did not understand why we had come," and he did not anticipate trouble. With a knowledge now of the result, and to throw as much light on the immediate cause of this war as possible, I give the last letters which passed between Major Thornburgh and Mr. Meeker; and I will here record my judgment that Major Thornburgh was an officer and gentleman of whom the Army has reason to be proud; he was young, ardent, ambitious, of good judgment, and no man could have done better in life or met death with more heroism:.

HEADQUARTERS WHITE RIVER EXPEDITION,
Camp on Fortification Creek, September 25, 1879.

SIR: In obedience to instructions from the General of the Army, I am *en route* to your agency, and expect to arrive there on the 29th instant, for the purpose of affording you any assistance in my power in regulating your affairs, and to make arrests at your suggestion, and to hold as prisoners such of your Indians as you desire, until investigations are made by your department.

I have heard nothing definite from your agency for ten days, and do not know what state of affairs exists, whether the Indians will leave at my approach or show hostilities. I send this letter by Mr. Lowry, one of my guides, and desire you to communicate with me as soon as possible, giving me all the information in your power, in order that I may know what course I am to pursue.

If practicable, meet me on the road at the earliest moment.

Very respectfully, your obedient servant,

T. T. THORNBURGH,

Major Fourth Infantry, Commanding Expedition.

MR. MEEKER, Indian Agent, White River Agency, Colo.

WHITE RIVER AGENCY, COLO., September 27, 1879.

SIR: Understanding that you are on the way hither with United States troops, I send a messenger, Mr. Eskridge, and two Indians, Henry (interpreter) and John Ayersly, to inform you that the Indians are greatly excited, and wish you to stop at some convenient camping place, and then that you and five soldiers of your command come into the agency, when a talk and a better understanding can be had.

This I agree to, but I do not propose to order your movements, but it seems for the best.

The Indians seem to consider the advance of the troops as a declaration of real war. In this I am laboring to undeceive them, and at the same time to convince them they cannot do whatever they please. The first object now is to allay apprehension.

Respectfully,

N. C. MEEKER,

Indian Agent.

To Major THORNBURGH,

Or Commander United States Troops between Bear and White Rivers, Colorado.

HEADQUARTERS WHITE RIVER EXPEDITION,
Camp on Williams Fork, September 27, 1879.

SIR: Your letter of this date just received. I will move to-morrow with part of my command to Milk River, or some good location for camp, or possibly may leave

my entire command at this point, and will come in as desired with five men and a guide. Mr. Eskridge will remain to guide me to the agency.

I will reach your agency some time on the 29th instant.

Very respectfully, your obedient servant,

T. T. THORNBURGH,

Major Fourth Infantry, Commanding Expedition.

Mr. MEEKER,

United States Indian Agent, White River Agency.

HEADQUARTERS WHITE RIVER EXPEDITION,

Camp on Deer Creek, September 23, 1879.

SIR: I have, after due deliberation, decided to modify my plans as communicated in my letter of the 27th instant in the following particulars:

I shall move with my entire command to some convenient camp near, and within striking distance of, your agency, reaching such point during the 29th. I shall then halt and encamp the troops and proceed to the agency with my guide and five soldiers, as communicated in my letter of the 27th instant.

Then and there I will be ready to have a conference with you and the Indians, so that an understanding may be arrived at and my course of action determined. I have carefully considered whether or not it would be advisable to have my command at a point as distant as that desired by the Indians who were in my camp last night, and have reached the conclusion that under my orders, which require me to march this command to the agency, I am not at liberty to leave it at a point where it would not be available in case of trouble. You are authorized to say for me to the Indians that my course of conduct is entirely dependent on them. Our desire is to avoid trouble, and we have not come for war.

I requested you in my letter of the 26th to meet me on the road before I reached the agency. I renew my request that you do so, and further desire that you bring such chiefs as may wish to accompany you.

I am, very respectfully, your obedient servant,

T. T. THORNBURGH,

Major Fourth Infantry, Commanding Expedition.

Mr. MEEKER,

United States Indian Agent, White River Agency, Colo.

UNITED STATES INDIAN SERVICE,

White River Agency, September 29, 1879—1 p. m.

DEAR SIR: I expect to leave in the morning with Douglas and Serrick to meet you. Things are peaceable, and Douglas flies the United States flag. If you have trouble in getting through the cañon to-day let me know "in (what) force." We have been on guard three nights and shall be to-night, not because we know there is danger, but because there may be. I like your last programme. It is based on true military principles.

Most truly, yours,

N. C. MEEKER,

Indian Agent.

I give these letters entire because I believe that Major Thornburgh acted from beginning to end exactly right. So did Mr. Meeker, and the crimes afterward committed rest wholly on the Indians.

On the 29th of September Major Thornburgh's command was attacked by about 300 well-armed warriors at a most difficult part of the road, about twenty miles north of the agency. Major Thornburgh and ten of his men were killed; three officers and twenty men were wounded, when the command under Captain Payne fell back to the wagons, and made preparations to defend themselves. Captain Payne succeeded in sending a messenger back to the railroad, with a report of the fight—its general results, and a call for assistance. General Crook instantly ordered Col. Wesley Merritt, of the Fifth Cavalry, then at Fort D. A. Russell, with 530 men, by rail to Rawlins, and thence to the relief of this command. By most extraordinary exertions and a hard march, Colonel Merritt reached the beleaguered command on the morning of October 5, and found that Captain Dodge's company of the Ninth Cavalry had most opportunely arrived the day before from the Middle Park.

* In the original "in force." I think he meant "in what force."—W. T. S.

Other troops were hurried forward by Generals Sheridan and Crook, re-enforcing Merritt to about a thousand effectives, when he, after providing for the wounded and dead, pushed on to the agency, which he reached on the 11th, finding it burned down, and the murdered bodies of Mr. Meeker and six employees, having buried three others on the road. The Indians had all gone south toward Grand River, carrying with them Mrs. Meeker, Miss Meeker, Mrs. Price, and her two children.

As soon as the re-enforcements *en route* overtook him, Colonel Merritt began his pursuit south, over mountains impassable to anything but men, horses, and pack animals; but before he had reached the crest of the first mountain, he was overtaken by a dispatch of which the following is a copy:

HEADQUARTERS ARMY OF THE UNITED STATES.

Washington, D. C., October 13, 1879.

General P. H. SHERIDAN,

Commanding Division, Chicago, Ill.:

The honorable Secretary of the Interior has, this 10.30 a. m., called with a dispatch, given at length below, which is communicated for your information, and which should go for what it is worth to Generals Crook and Merritt. The latter, on the spot, can tell if the hostiles have ceased fighting. If so, General Merritt should go in every event to the agency to ascertain the actual condition of facts. All Indians who oppose must be cleared out of the way if they resist. If they surrender their arms and ponies, they should be held as prisoners, to be disposed of by superior orders.

The Secretary of the Interior will send a special agent at once to Ouray, who is believed to be honest and our friend. He may prevent the Southern Utes from being involved, and the Interior Department can befriend him afterward by showing favor to some of his special friends.

But the murderers of the agent and servants must be punished, as also those who fought and killed Major Thornburgh and men.

Please acknowledge receipt.

W. T. SHERMAN, *General.*

[Inclosure by telegraph.]

LOS PINOS INDIAN AGENCY, COLORADO,

October 12, 1879—1.50 p. m.

Employee Brady and escort of Indians, just arrived from White River, reports Utes recognized and obeyed Ouray's order; withdrew, and will fight no more unless forced to do so. If soldiers are now stopped, trouble can be settled by peace commission to investigate facts and let blame rest where it may. This will save life, expense, and distress, if it can be accomplished.

Later, 1.30. p m. (?)—Runner just from Southern Ute Agency, with letter from agent. Council held; Utes will abide Ouray's request; want peace; will stay at home, and take no part in White River trouble; and request Ouray to inform them of their decision.

STANLEY, *Agent.*

I concur in and indorse the above.

OURAY,
Head Chief of Utes.

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,

Chicago, Ill., October 13, 1879.

General W. T. SHERMAN,

Washington, D. C.:

Your dispatch of this date this moment received, and will be forwarded immediately to General Crook, with orders to carry out your instructions therein set forth. A copy will also be sent to General Pope.

P. H. SHERIDAN,
Lieutenant-General.

Colonel Merritt construed these dispatches as limiting his action to White River, and accordingly returned to the neighborhood of the burned agency, established his camp, and there awaited the result of

the negotiations begun by order of the honorable Secretary of the Interior.

Whilst so awaiting, Colonel Merritt, on the 20th of October, sent forward two companies of cavalry, under Captain Wessells, and Lieutenant Hall, with a party of scouts to reconnoiter roads toward the summit between White and Grand Rivers. Lieutenant Weir, of the Ordnance, a fine young officer, asked and obtained leave to accompany Lieutenant Hall. When about twenty miles out, Lieutenant Weir and William Humme, chief of scouts, rode to one side to hunt deer, encountered a picket party of Indians. Shots were exchanged, and both Lieutenant Weir and Humme were killed. Their bodies were afterward recovered. This party of Indians have since been met by Mr. Adams, the special agent, and insist they had no purpose to fight; that they were simply watching the movements of Merritt's troops; that Mr. Humme fired first, killing one of their party, when they in turn killed both Humme and Lieutenant Weir. The sad fate of this young officer is specially deplored by a very large circle of friends.

Meantime great alarm pervaded all parts of Colorado, and was spreading to New Mexico and Wyoming. Reports of the wildest character came pouring in from places a thousand miles away from any real danger, but Generals Sheridan, Crook, and Pope, knowing the proclivity of Indians to war, and the intimate relations of the four bands of Utes, numbering 4,164 souls, of whom about 800 are skillful, brave warriors, made immediate preparations for every contingency. Colonel Merritt's force at White River was strengthened to about 1,500 men. Colonel Mackenzie, with six companies of the Fourth Cavalry, was brought rapidly from Fort Clark, Texas, to Fort Garland, Colorado, and re-enforced by other troops belonging to the Department of the Missouri to about 1,500 men, and Colonel Hatch, of the Ninth Cavalry, with about 450 men from New Mexico, was ordered to Fort Lewis, Pagosa, Colo. The following dispatch will show the objects aimed at, and are the "orders" existing at this moment of time:

HEADQUARTERS OF THE ARMY,
Washington, D. C., October 24, 1879.

General P. H. SHERIDAN,
Commanding Division, Chicago, Ill.:

I have received your three dispatches of yesterday, giving account of the killing of Lieutenant Weir and of the strength of your forces at White River, Forts Garland and Lewis.

All these seem strong enough and are well commanded. Let all preparations proceed, and be ready the moment I give the word to pitch in. Should Agent Adams fail in his mission I understand that the civil authorities will stand aside and the military will take absolute control of this whole Ute question and settle it for good and all. Meantime, humanity to the captive women and the friendly Utes, even of the White River Agency, justifies this seeming waste of time.

W. T. SHERMAN, *General.*

All the world now knows that the special agent, General Charles Adams, of Colorado, appointed by the Secretary of the Interior to conduct these negotiations with the hostile Utes, has partially succeeded in his mission; has obtained the surrender of Mrs. and Miss Meeker, Mrs. Price and her two children, who are already safe with their friends. He is now supposed to be again with the hostiles on Grand River, endeavoring to effect the other conditions required of the Utes by the honorable Secretary of the Interior, who is primarily responsible for the entire management of the whole case. I certainly applaud the courage and energy thus far displayed by General Adams, and hope he will fully and completely succeed in his praiseworthy mission, and yet believe that prudence demands that military preparations and precautions shall

not slacken. Thus far we have lost eleven citizens, two officers, and twelve soldiers killed, and 41 wounded. The Indians admit a loss of 39 warriors killed, so that they have not much reason to boast.

It so happened that about the same time some of the Apaches who belonged to the Mescalero Agency, near Fort Stanton, New Mexico, more than six hundred miles south of White River, began a raid upon the ranches and settlements in Southern New Mexico. Major Morrow, of the Ninth Cavalry, is now in pursuit of these Indians, and has subject to his orders about 450 men, but is beyond the reach of the telegraph, so I am unable to give anything definite from him; but these Apaches have no connection whatever with the Utes, have always been restless and mischievous, and only resort to agencies to rest, recuperate, and make ready for the next war. I infer that as soon as winter comes they will return to their agency and be "good."

In the Military Division of the Pacific there are many Indians, most of whom are located on small reservations, so that outbreaks are rare; still in the Department of the Columbia and in Arizona there remain some tribes that are liable to break out at any moment, by reason of the rapid settlements, especially in the upper valley of the Columbia and at the San Carlos Reservation of Arizona. The reports of Generals McDowell and Howard, and of Colonel Willcox, are so full and satisfactory that I need only say that their efforts, supported by their active troops, have maintained a comparative state of peace throughout the past year, and there is good reason to hope that this condition of affairs will have a long duration.

I certainly will approve any action which will improve the habitations and barracks at the remote stations in which our troops are quartered. These are of the most indifferent kind, especially in Southeast Arizona; but the recent extension of the Southern Pacific Railroad will soon enable the quartermasters to transport lumber, brick, &c., so as to convert the present dirty "*Jacals*" into neat and not costly frame buildings. This railroad is now completed from San Francisco to Casas Grandes, about two hundred miles east of Fort Yuma, and I have assurances that it will be extended during this year about eighty miles further to Tucson. At the same time the Atchison, Topeka and Santa Fé Railroad is completed to Las Vegas, N. Mex., and is being pushed toward Albuquerque and Socorro. I do believe the military interests of Arizona will justify the grant of material aid to these railway companies so as to close the existing gap between the two ends and thus complete another trans-continental railroad from the East to San Francisco, via Tucson, Fort Yuma, and Los Angeles. Such a railroad would accomplish more for the settlement of New Mexico and Arizona than any other single enterprise.

MILITARY EDUCATION.

Steam and electricity have brought all parts of the earth into such close relations that we are forced into rivalry with foreign nations in the matter of military education and training, and I believe we have no reason to shrink from the comparison. Whilst other nations claim superiority in military affairs, by reason of larger establishments and greater experience, it so happens that modern guns and breech-loading rifles have, in late years, almost revolutionized the equipment and tactics of armies, and we are fortunately encumbered with but few old prejudices to be unlearned, and are free to adopt what is excellent among the discoveries and improvements of every land. Our Army is small and intended to be a school of instruction, yet it is necessarily divided up

into small garrisons and is so constantly employed in building new posts and cantonments; in making roads, and in other manual labor, that from personal inspection and the reports of inspectors-general, I fear that less time is given to drills and professional instruction than should be the case. This makes more important the theoretical and practical education of the Military Academy at West Point, and of the Artillery School at Fortress Monroe. Therefore I invite special attention to the reports of their Superintendents, Major-General Schofield and Colonel Getty. These institutions are admirably conducted and will compare favorably with similar colleges in Europe, but, as General Schofield well remarks, young graduates are too apt to regard their education as complete when they leave the Academy, whereas, like workmen, they have simply acquired the rudiments and a knowledge of their tools. A post graduate course, or schools of application are needed, of which the Artillery School is a sample, but this is necessarily limited to the few officers and men of that arm of the service who can be spared from their legitimate duties.

Similar schools should be established and maintained for the cavalry and infantry. These have repeatedly been attempted at Forts Leavenworth and Snelling, but no sooner have they been begun than some Indian outbreak has imperatively called away the troops, so that at this time we have nothing of the kind. Books, magazines, and pamphlets in limited quantities are now supplied to each permanent post by the Quartermaster's Department, and every possible encouragement in the way of study, of practice, and observation has been and will be given the troops; but the day must come when schools for infantry and for cavalry will be established, in the nature of a post graduate course, and if possible for instruction in the use of the rifle and the horse before young officers and recruits are pushed into battle and danger. The reports of Generals Hancock and McDowell show that our officers and men have made great progress in rifle-practice, which should be encouraged, and the recent publications of Lieutenant-Colonel Upton, "Armies of Asia and Europe," and of Lieut. F. V. Greene, "Russian Campaigns in Turkey, 1877-'78," show that the Army possesses young officers who study and keep in the foreground of military knowledge.

I also invite attention to the remarks of General Schofield when treating of the modern practice of members of Congress selecting cadets by means of a competitive examination:

This method of selection is highly beneficial. It is, however, liable to one source of injury against which it is important to guard, especially since the method of selection seems likely to become very general, if not universal. While the member of Congress is relieved by this means from the very difficult task of selecting a candidate who shall certainly possess the requisite mental and physical qualifications his responsibility still remains for the moral character of his nominee. Good character and manly deportment are certainly no less important than scholarship and physical health. Bad habits contracted by a young man already twenty or twenty-one years of age are not easily corrected, and they are more likely than any lack of mental ability to bring mortification and disappointment to those who are most interested in his honorable career. If manly character, mental ability, and scholarship can all be given their due weight in the competition for appointments, then only unmixed good may be expected from this method of selection.

Every member of Congress will recognize the truth of this statement, and can instruct the committee appointed by himself to include "moral and manly character" into the scale of excellence for his own guidance.

I also invite attention to his report on the importance and general economy of educating each year at West Point a number of cadets "for the militia of the United States." Should Congress entertain such a proposition I earnestly recommend that each of the thirty military col-

leges now equitably distributed and provided by law with an Army officer as "Professor of the Military Art," be permitted to nominate one cadet each year. I am convinced that such a boon would stimulate these colleges and provide some of the very best possible candidates for the National Military Academy. The average loss to the Army in officers by death, retirement, resignation, and dismissal amounts to about 3 per cent., or sixty per year. With thirty cadets added to each fourth class the number of graduates would average about seventy-five or eighty, and assuming sixty as the annual number needed for the existing national military establishment, we would have about twenty young graduates to be returned annually to their respective States, who would be most useful as instructors for the volunteers and militia. I doubt whether this increase of the corps of cadets would add 10 per cent. to the usual appropriation, and yet the result would be inestimable.

In conclusion, I beg to submit the annual reports of the Adjutant-General and of the Inspector-General of the Army, inviting attention to their several recommendations, and to these I add the reports of Inspectors-General Sackett and Schriver, because they did not come to me in their usual connection with the reports of the general officers on whose staff they were serving, where they properly belong.

I have the honor to be, your obedient servant,

W. T. SHERMAN,
General.

Hon. GEO. W. McCrARY,
Secretary of War.

REPORT OF THE ADJUTANT-GENERAL.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
Washington, October 20, 1879.

GENERAL: I have the honor to submit the following annual returns for Congress:

Table A.—Organization of the Regular Army.

B.—Return showing actual strength of the Regular Army.

C.—Distribution of troops in the Departments of Missouri, Texas, Platte, and Dakota, Division of the Missouri.

D.—Distribution of troops in the Departments of the East and South, Division of the Atlantic.

E.—Distribution of troops in the Departments of California, the Columbia, and Arizona, Division of the Pacific.

F.—Department of West Point.

G.—Statement of the number of desertions during fiscal year ending June 30, 1879.

H.—Statement of the number of minors discharged from October 1, 1878, to October 1, 1879.

I.—Statement of casualties, enlistments, and re-enlistments during the fiscal year ending June 30, 1879.

K.—Statement of number of patients admitted to the Government Hospital for the Insane from October 1, 1878, to October 1, 1879.

The following is the report upon the recruiting service during the past year:

The depots for infantry at David's Island, New York Harbor, and

Columbus Barracks, Ohio, and for cavalry, at Jefferson Barracks, Missouri, have been efficiently maintained, and the locations recently established at those points have proved suitable.

As many rendezvous have been maintained at the most productive points as the extent of the appropriation would admit.

At David's Island it is of pressing importance that additional buildings, and those of a permanent nature, should be provided as soon as practicable. As will be seen by the last annual report, only a few buildings of wood could be erected to house the men after the hasty transfer of the depot from Governor's Island. These are not only inadequate to accommodate the number of men often collected for distribution to regiments, but they are not of the permanent and comfortable character which ought to be erected at a post likely to be maintained for many years. The estimates, accompanied by plans, which will be submitted for appropriate buildings may seem large, but it is believed they will not be found unnecessary or unreasonable.

The system of recruiting maintained for the past few years continues, as reports from the Army show, to be productive of good results. High commendation is given to the character of men generally composing the rank and file. Making due allowance for the fact that want of employment in civil life has induced a better class of men to enlist, there can be no doubt that the care exerted to cause the rejection of unworthy applicants has also had its influence.

At the cavalry depot there are now some few horses fit for exercise in that branch. But the need which is constantly arising for drafting detachments to fill the companies in active or frontier service prevents the detention of recruits long enough in depot to give them even the rudiments of drill as soldiers. In the cavalry service the sending of raw recruits to join companies actually in march is poor economy. Men thus initiated, if not totally worthless from their ignorance of the care and management of horses, can rarely make really good soldiers. Just after the close of the war there existed for a short time a law which enabled the President to keep under instruction in depot three thousand recruits in excess of the Army organization. With this latitude training schools for material for non-commissioned officers were established, and all recruits were taught duties of sentinel and practice in firing, besides the principles of the march, before they joined their companies. Enough was shown of the experiment during the brief period before the law was repealed to demonstrate its beneficial effect on Army discipline and its economical saving in the way of desertion and dishonorable discharge.

Moreover, when the Army is so strictly limited to 25,000 enlisted men, casualties occur at distant posts, the report of which is not received for some time after they occur. It is thus impossible to keep the companies up to the full standard without overrunning the legal number allowed for the whole Army, for the recruits in depot have also to be counted in that number.

In view of these facts, it is greatly to be desired that provision should be made for even one thousand recruits in excess of the standard. Even with this provision it is calculated that there would rarely be in the Army under pay more than 25,000 at any one time.

The number of discharges is somewhat greater than it would otherwise be from the fact that many old soldiers having families have sought to take advantage of any opportunity that might arise to obtain work in civil life, in view of the recent act which forbids women to accompany the troops. It is a question whether the act referred to will really promote the economy or efficiency of the Army. The appointment of

REPORT OF THE INSPECTOR-GENERAL.

HEADQUARTERS ARMY OF THE UNITED STATES,
INSPECTOR-GENERAL'S OFFICE,
Washington, D. C., October 20, 1879.

SIR: I have the honor to report that during the past year the officers of the Inspector-General's Department have been stationed and employed as follows, namely:

The undersigned has been in charge of the office at these headquarters, occupied in the various duties pertaining thereto. He has also made special investigations under the orders of the Secretary of War, served as a member of the "Stauley-Hazen court-martial," inspected the accounts of certain disbursing-officers, and made the quarterly inspections of Fort Leavenworth Military Prison, as required by section 1348, Revised Statutes.

Inspector-General Delos B. Sacket has been on duty at the headquarters Military Division of the Missouri. He has been engaged in making numerous investigations and special inspections under the orders of the Lieutenant-General commanding, inspections of national cemeteries and of the accounts of disbursing-officers in the division, not under the orders of the division commander.

Inspector-General Edmund Schriver has been stationed at the headquarters Military Division of the Pacific, under the orders of the major-general commanding, and has also served as president of the board of officers appointed to review the proceedings of the "Hammond court-martial."

Inspector-General Nelson H. Davis has been stationed during the year at the headquarters Military Division of the Atlantic, and has been engaged in making numerous investigations and inspections under the orders of the major-general commanding.

Assistant Inspector-General Roger Jones has continued on duty in this office as my assistant, and, in addition to his regular current duties, has made several investigations and inspections under the orders of the Secretary of War.

Assistant Inspector-General Absalom Baird has during the year been serving at the headquarters Military Division of the Missouri, and has been actively engaged in making inspections, and upon other duty under the orders of the Lieutenant-General commanding.

Assistant Inspector-General Elisha H. Ludington, having been found, by an Army retiring-board, incapacitated for active duty on account of disability incident to the service, was, by direction of the President, by Special Orders No. 74, Adjutant-General's Office, March 27, 1879, retired from active service in conformity to section 1251, Revised Statutes.

The following-named officers have been on duty as acting assistant inspectors-general in the different departments since my last annual report, namely:

Lieut. Col. John S. Mason, Fourth Infantry, in Department of Texas.

Lieut. Col. William B. Royall, Third Cavalry, in Department of the Platte.

Maj. James Biddle, Sixth Cavalry, in Department of Arizona.

Maj. Richard Arnold, Fifth Artillery, in Department of the East.

Maj. Edwin C. Mason, Twenty-first Infantry, in Department of the Columbia.

Captain George B. Russell, Ninth Infantry, in Department of the South.

The affairs of the establishment are well conducted under the immediate charge of Capt. A. P. Blunt, assistant quartermaster, and supervised by the department commander, General Pope. The convicts are properly disciplined and employed, while they are well fed and treated with humanity and kindness.

The machinery for the manufacture of shoes and boots is ready for operation, and will easily supply all required by the troops.

As the scheme of manufacturing certain army supplies has now been in operation for considerable time at the prison; and as the results already achieved have established, beyond question, the entire feasibility and economy of the experiment, as well as its beneficence in conducting to the health of the convicts, and instructing them in mechanical occupations that will tend to make them more useful and better citizens when they are released from confinement; and as the buildings afford ample room for extending mechanical work, I very respectfully recommend that measures be inaugurated for the fabrication of other Army supplies, which are now obtained from civilian contractors; and, by thus gradually adding to the articles manufactured here, the establishment will, in time, become nearly, if not altogether, self-sustaining.

The number of prisoners confined in the prison at the date of my last inspection, September 11, 1879, with the character of their offenses, were as follows:

For desertion.....	278
For violation 62d Article of War	41
For theft	12
For mutiny and mutinous conduct	6
For assault with intent to kill	2
Total	339

The diminished strength of the companies in the artillery and infantry arms of service, the great dispersion of the troops, and the consequent small garrisons at most of our military posts, with the constant work devolving upon them in building and repairing quarters, and other labor outside of their military duties, have, for the most part, rendered it impracticable to give sufficient instruction in battalion drills or other military exercises, yet a good state of discipline has generally been maintained, and the officers have done all in their power to insure proper instruction; but, owing to the diminutive garrisons, their efforts in this direction have for the most part been thwarted.

As an evidence of this, the last inspection reports made in the Department of the East show that thirteen of the twenty garrisoned posts in that department had, at those dates, an aggregate of only 298 enlisted men, or an average of 23 men to each garrison.

Copies of the annual reports of the inspecting officers for the past year, so far as they have been received, are herewith transmitted. They contain much important information regarding the affairs of the Army, and valuable suggestions regarding modifications in certain details of the service, which are respectfully recommended to favorable consideration.

The attention of the General of the Army is especially invited to the facts presented in Inspector-General Sacket's report upon the subject of extra-duty men, and their lack of instruction in soldierly duties at many military posts. Without instruction in military exercises and in the use of their arms and accouterments, they would be of little use in active field service, and unless company commanders are permitted and required to give such instruction, they cannot, as the Inspector-General

tion in the correct performance of their arduous service in garrison and in the field.

Respectfully submitted.

B. B. MARCY,
Brigadier and Inspector-General.

The ADJUTANT-GENERAL,
United States Army.

1.—REPORT OF LIEUTENANT-GENERAL SHERIDAN.

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,
Chicago, Ill., October 22, 1879.

GENERAL: I have the honor to submit herewith, for the information of the General of the Army, the following report of operations within the limits of my command since October 25, 1878, the date of my last annual report.

The organization of the division remains unchanged and consists of the following departments: The Department of Dakota, which comprises the State of Minnesota and Territories of Montana and Dakota, and is garrisoned by twenty-one permanent posts and four temporary encampments, commanded by Brig. Gen. Alfred H. Terry; the Department of the Platte, consisting of the States of Iowa and Nebraska and the Territories of Wyoming and Utah and a portion of Idaho, garrisoned by seventeen permanent posts, commanded by Brig. Gen. George Crook; the Department of the Missouri, consisting of the States of Illinois, Missouri, Kansas, and Colorado, the Indian and New Mexican Territories, and two posts in Texas, Forts Elliott and Bliss, garrisoned by twenty permanent posts and eight encampments, commanded by Brig. Gen. John Pope; and the Department of Texas, consisting of the State of Texas, which embraces the Mexican frontier, garrisoned by thirteen permanent posts and ten encampments, commanded by Brig. Gen. E. O. C. Ord.

In my last annual report, I called attention to the fact that our forces were too small to properly perform the duties incumbent upon them throughout the vast extent of territory they occupied. The ratio of the force was one man to every seventy-five square miles in the Departments of the Platte, Dakota, and the Missouri; and one man to every one hundred and twenty square miles in the Department of Texas, and there has been no change in that respect up to this time.

The forces of the division are assigned to the several departments as follows: In the Department of Dakota, officers and men, cavalry, 1,538; infantry, 3,649. In the Department of the Platte, cavalry, 1,463; infantry, 1,525. In the Department of the Missouri, cavalry, 1,269; infantry, 2,081. In the Department of Texas, cavalry, 1,817; infantry, 1,787; artillery, 188. The number of permanent posts in the division is seventy-one, which, together with twenty-two temporary encampments, has given us an aggregate of ninety-three stations to provide for during the summer. These posts have been garrisoned by eight regiments of cavalry, aggregating 6,087; four companies of artillery, with an aggregate of 188; nineteen regiments of infantry, with an aggregate of 9,042, and 200 Indian scouts; making a grand total of 15,517 officers and men.

For the details of the various Indian troubles and movements of

troops throughout the division, I refer you to the accompanying reports of the department commanders.

The report of General Terry, commanding the Department of Dakota, is comprehensive, and fully describes the operations in his department, and especially the expedition of Colonel Miles and the beneficial effects arising from it, to which I wish to add a just commendation, by saying that Colonel Miles, in the organization of his column and in his soldierly bearing, has given satisfaction to his superiors, and inspired confidence in the officers and men under his command. When the buffalo again return south of the northern boundary line, they will be followed by the Indians now living north of that line, or at least by their hunting parties, as these Indians are dependent for their main supplies of animal food upon the buffalo herd, and it will be exceedingly difficult to establish any international conditions which will prevent such an invasion of our territory. The number of Indians dependent upon these herds for subsistence aggregate many thousands. I therefore concur with General Terry in his recommendation for the establishment of another large military post about midway between Forts Buford and Assinaboine, and as near to the northern boundary line as the local conditions will permit; and I recommend that an appropriation of \$200,000 be asked for its construction. The rapid progress of the Northern Pacific Railroad will fill up the Northwest with hardy pioneers and emigrants, and the establishment of this new post should take place during the summer of 1880.

The report of General Crook illustrates the condition of affairs in his department. The reference which he makes to the Camp Robinson prisoners I only wish to supplement with the remark, that it is to be regretted that the small number of troops then available did not admit of a larger force at that place at the time of the outbreak, as it might by its presence have sufficiently intimidated the determined and sanguinary savages who were there confined. It is useless for me to speak about the grievances of these Indians; they belong to a system which has obtained for many years. It is enough for me to say that the "poor Indian" fully sustained his cruel nature by making a breastwork of his women and children in resistance to the orders which sent him back to his agency, where he alleges he was pinched with hunger and his people were dying from fever arising from certain climatic conditions of the country. In what occurred at Camp Robinson the troops had no responsibility, they had but to obey orders originating in requests from the Indian Bureau, and the only thing to be regretted is that the occurrence might possibly have been avoided had we had an overwhelming force to meet it; but we had not. It is also to be deplored that the most guilty of the band of Northern Cheyennes which escaped about the same time have not been punished. They murdered men, women, and children in Kansas and have gone free, and this circumstance will be likely to give encouragement to these and other Indians at some future time to attempt the same thing.

In the Department of the Missouri much trouble was occasioned by the attempted invasion of the Indian Territory by squatters, but the prompt action of the President of the United States in giving full authority to the troops to act has resulted in putting a stop for the present to these restless adventurers, and we hope very soon to clear the Territory of another class of desperate characters, who for a long period have rendered life and property insecure there.

In New Mexico, a band of Apaches, under the Chief Victoria, broke away from their reservation, to which they had gone reluctantly, and

the result has been bloodshed, expense, and anxiety. They have killed five soldiers, two scouts, and fifteen or sixteen citizens, including one if not more families of women and children, but to some extent have already been punished by the troops who are still in pursuit. The most recent information from New Mexico, though not yet officially confirmed, goes to show that great destruction to life and damage to property has been committed in the Mesilla Valley by these same Indians, although they are constantly and energetically pursued by our troops. Their tactics being to attack and plunder some given point, then to scatter like quails, and meet again at some other distant point previously understood, for plunder, and again scatter, therefore it is exceedingly difficult for our troops to overtake and punish them. At present, however, the prospect looks fair that they will soon be overtaken and killed or captured.

The recent and unexpected outbreak of the Utes at the White River Agency seems to have been brought about, as far as I can ascertain, by local causes. The Indian agent wished them to engage in farming, and many of them were uncompromisingly hostile to anything in the way of labor which might assist in making them self-supporting. As soon as a knowledge of the trouble was communicated by the Indian Bureau to the military authorities, a force which was deemed more than sufficient by the agent was sent from the nearest post, under command of Major Thornburgh, Fourth Infantry. Before the troops reached the agency, the agent, Mr. Meeker, and most of his employes, were murdered by the Indians, who then came out and attacked Major Thornburgh's force at a point eighteen miles distant from the agency, killing Major Thornburgh and twelve of his men and wounding forty-two others, officers and men. The ground selected by the Indians for this attack was exceedingly favorable to them, and they succeeded in beleaguering the command and held it until it was relieved by Colonel Merritt's command, which was thrown forward with great rapidity to its rescue. The troops under Colonel Merritt then pushed on to the agency without opposition, where they discovered the dead bodies of the agent and his employes. At present a large column of troops is held at White River Agency, another large column is being organized at Fort Garland, and still another in the Animas Valley, pending the action of the Indian Bureau, through its special agent, General Adams; and these troops will be held at these points, awaiting the result of General Adams' negotiations with Chief Ouray for the surrender of the murderers.

The report of Brigadier-General Ord gives a full and interesting account of the status of affairs in his department for the past year.

Nearly all the vexatious conditions which have heretofore existed along the Rio Grande—the boundary line between our country and the Republic of Mexico—have ceased, owing to the active efforts of our own troops and those of the Mexican Government; an earnest and generally successful effort having been made upon both sides of the line to capture and destroy all raiding parties. Small parties of Indians occasionally succeed in evading the troops, and commit robberies and outrages upon the outlying settlements and mail routes; some of these parties at times entering Mexico from our side and others coming from that country into this. It has been pretty well established that most of the raids made by our Indians have their origin on the Fort Stanton Indian Reservation. I have repeatedly called the attention of the authorities to this fact and to the impossibility of stopping them, unless the reservation is placed directly under the control of the military; when, I am satisfied, we would be able to put an end to them.

from a suspicion on the part of the Indians that they are to be deprived of their homes by a concentration in order to make fewer agencies.

It should not be forgotten that there is no established system of government among Indians for the punishment of crime, and the little influence possessed by their chiefs is entirely disregarded whenever in the opinion of the individual Indian his present safety or other interests are threatened; and among communities so loosely governed, composed of men so wild and savage in their nature, we must as a natural sequence expect to be occasionally startled by some most sanguinary outbreaks.

There should always be some power to control or punish. We cannot govern highly civilized communities without at least the force of law to guide and even punish, and much less ought we to expect to control wild Indians without a force to compel obedience to such rules as may be wisely established by the proper authorities for their benefit.

The supply departments throughout the division have worked well and economically, and the officers in control of this important branch of the service are entitled to credit for their services.

The department commanders have faithfully performed their duties, and the line and staff have all done well.

I have the honor to be, General, very respectfully, your obedient servant,

P. H. SHERIDAN,
Lieutenant-General, Commanding.

Brig. Gen. E. A. TOWNSEND,
Adjutant-General of the Army, Washington, D. C.

REPORT OF BRIG. GEN. ALFRED H. TERRY.

HEADQUARTERS DEPARTMENT OF DAKOTA,
Saint Paul, Minn., October 1, 1879.

SIR: I have the honor to submit the following report of the military operations which have taken place in this department during the past year:

* * * * *

The following is a general "record of events" during the year, taken principally from the post returns:

October 6, 1878, about 9 o'clock a. m., sparks from a prairie fire, in the vicinity of Fort Stevenson, were driven by a violent wind into the corral, totally destroying it and a quantity of coal and wood used for fuel. Only by the most strenuous exertions of the command was the post saved from destruction.

Telegraphic information having been received at these headquarters from the division commander that a body of hostile Cheyenne Indians, numbering about 60 men, with their families, were endeavoring to reach the Old Red Cloud Agency, and were being pursued by troops from the Department of the Missouri, preparations were made in this Department to intercept and capture them, provided they should escape the forces in the Department of the Platte; and orders were immediately issued to the commanding officers of the Seventh Cavalry, Red Cloud, Spotted Tail and Cheyenne Agencies, and Fort Randall, to send out at once sufficient force from their respective commands for this purpose. In pursuance of these orders, on the 6th of October, Companies C and L,

of 11 men of the Third and Seventh Infantry, left Fort Shaw for the North Fork of Sun River in search of Indians reported to be roaming in that vicinity without authority.

In accordance with the provisions of General Orders No. 79, of 1878, from the Headquarters of the Army, the names of certain posts in this department were changed on the 30th day of December, 1878, and were announced in General Orders No. 9, of that year, from Headquarters Military Division of the Missouri, as follows:

The new post near Bear Butte, Dak., to be hereafter known as Fort Meade.

The post at Standing Rock Agency, Dak., to be hereafter known as Fort Yates.

The post at Cheyenne Agency, Dak., to be hereafter known as Fort Bennett.

The post at Lower Brulé Agency, Dak., to be hereafter known as Fort Hale.

Camp Baker, Mont., to be hereafter known as Fort Logan.

February 16, 1879, Company A, Second Cavalry, and Company F, Fifth Infantry, under command of Capt. S. Snyder, Fifth Infantry, left Fort Keogh for Glendive, Mont., there to watch the crossing of the Yellowstone River, and intercept or capture hostile Indians who were reported to be moving in that direction.

February 23, First Lieut. William Krause, Third Infantry, with 6 enlisted men (mounted), left Fort Benton and proceeded to Fort Claggett, Mont., and to the Crow Indian camp in the vicinity of Armell's Creek, Montana Territory, to recover certain horses stolen from British half-breeds by Crow Indians, and to investigate an alleged complaint made by one Henry P. Brooke against certain River Crows of the Belknap Agency, for killing and mutilating his cattle. The detachment returned to its post April 1, having traveled about 300 miles.

February 23 a battalion of the Seventh Cavalry, under command of First Lieut. A. H. Nave, Seventh Cavalry, left Fort Meade for Rapid City, Dak., in pursuit of a band of hostile Indians, who were reported to have attacked wagon-trains and to have committed other depredations in that vicinity. The command discovered no signs of Indians, except a few pony tracks, and returned to its post February 28, having made a thorough scout in that vicinity. Distance marched by Company E, 206 miles; by Company M, 190 miles.

During the month several scouting parties were sent out from Forts Custer and Keogh to intercept hostile Cheyenne Indians (supposed to be Little Wolf's band) who were committing murders and depredations, and to prevent them from passing the Yellowstone. An expedition under command of First Lieut. W. P. Clark, Second Cavalry, left Fort Keogh, on February 22, 1879, to intercept hostile Cheyenne Indians who were moving north after having committed murders and depredations along their route.

February 27, Company F, Sixth Infantry, at the request of Colonel Miles, Fifth Infantry, left Fort Buford and proceeded up the Yellowstone River as far as Gorham's ranch, there to watch the river with a view to intercept hostile Cheyenne Indians endeavoring to escape northward. The company returned to its station March 12.

March 3, Lieut. S. H. Loder, Seventh Infantry, with 14 enlisted men of Companies K, Third Infantry, and D, Seventh Infantry, left Fort Logan in quest of Ten Doy's band of Bannock Indians, to communicate to him and his band the order of the Interior Department for their removal to Fort Hall. Having accomplished the object of the movement

that point to the mouth of the Musselshell River. The detachment returned to its post May 7, having traveled about 280 miles.

April 12, First Lieut. George H. Wright, Seventh Infantry, with 3 enlisted men, Second Cavalry, left Fort Ellis as escort to Ten Doy's band of Bannock Indians through the settlements to their reservation and agency at Lemhi, Idaho.

April 15, between 7 and 8 o'clock p. m., the Eighteenth Infantry arrived in Saint Paul *en route* to the new post (Fort Assinaboine) to be established on Beaver Creek, Montana. The regiment left Saint Paul about midnight and arrived in Bismarck on the 17th, where it embarked the same day on the steamers General Sherman, Key West, and Josephine. Two companies were left at the Coal Banks to protect stores and the remaining eight companies arrived at the site of the new post May 9.

April 23, Capt. George L. Tyler, Second Cavalry, with Company F, Second Cavalry, left Fort Ellis to scout the Yellowstone River in the vicinity of Stillwater and establish a temporary camp there, to protect the citizens of that region from hostile Indians and so-called "road agents."

During the month scouting parties were sent out from Forts Missoula, Shaw, and Ellis to scout along the Missoula and Yellowstone Valleys and the country between the Gallatin and Musselshell Rivers and Judith Basin.

May 28, upon the request of the United States Indian agent at the Fort Peck Agency, Poplar River, Montana, Company E, Sixth Infantry, under command of Capt. Thomas Britton, Sixth Infantry, left Fort Buford for that point to prevent a threatened outbreak among the Indians of the agency. Hunger appeared to have been the chief cause of discontent. The company returned to its post July 9.

May 30, Company A, First Infantry, left Fort Randall to escort a party sent out to make a survey of the Rosebud and Pine Ridge Agencies. The company marched on this duty 136 miles.

June 2, First Lieut. J. M. Burns, Seventeenth Infantry, with a detachment of 14 enlisted men of that regiment and one Indian scout, left Fort Sisseton for the James River Valley, to prevent a collision between white settlers and Drifting Goose's band of Sioux Indians. The presence of the troops had the desired effect. The command returned to Fort Sisseton on June 12, having marched about 180 miles.

June 20, Companies A and I, Seventh Infantry, left Fort Shaw under command of Maj. Guido Ilges, and proceeded to Fort Benton, where they were joined by Company D, from Fort Logan, and Company G, from Fort Ellis. The four companies, under the command of Major Ilges, embarked June 30 on board the steamer Benton and proceeded to the mouth of the Musselshell River, where they established a summer camp.

In March last a petition was forwarded by settlers in Southern Montana asking that a summer camp be established at Henry's Lake for their protection against raiding Indians. The locality referred to is in the Department of the Platte; but as it is more easily accessible from Fort Ellis than from any post in that department, I, with the assent of the Lieutenant-General and the commanding general Department of the Platte, caused Company E of the Third Infantry to proceed to the point from Fort Ellis, June 23, and establish the camp as desired.

June 25, in compliance with instructions from Headquarters Military Division of the Missouri, Company I, First Infantry, left Fort Randall to establish a summer camp on the Keya-Paha River for the protection of settlers in Holt County, Nebraska.

Between the 1st and 5th of July a column, under command of Col. N.

On February 27, the Yellowstone River suddenly rose some six feet and carried out the ice, though the thermometer had for a day or two previous indicated 33° below zero. This sudden flood compelled me to move to high ground on banks of O'Fallon's Creek.

On March 4, moved back to Powder River for the purpose of crossing rations and forage, the ice having broken in this stream on March 3d, leaving, however, a wide gorge of ice on the banks.

On March 7, two Sioux scouts, with Interpreter Fleury, who had been sent out on Bismarck mail-line from Fort Keogh, reported at my camp, and I detained them with me.

On March 8, I sent two Sioux scouts out to make an extended scout up Powder River to crossing of Black Hills and Keogh road, thence over to the Little Missouri on this road, then to go down this stream, and, if not finding trail before, to scout well towards Slim Buttes. On the 11th they returned to camp at 8 a. m., and reported as having seen some Indians hunting on foot about 50 miles up Powder River. I at once started out three scouts, including one of these who had brought in the report, to go and locate the village and indicate a point at about where I would meet them. Leaving tents standing with a small guard, taking ten days' rations on packs, and as much forage as possible. I left camp at 12 m., and marched out on Bismarck stage-line some 22 miles, which point I reached just at dark; from here I struck off for the pine bluffs and ridges near Powder River, thus crossing a high plateau of rolling prairie where my command could have been seen at a long distance if I had not crossed at night, and went into camp in a well-concealed position at 11 p. m. The night was intensely dark, and for a time rained heavily, making our progress slow and extremely difficult, and but for the Indian scouts we certainly could have done nothing.

The next day we advanced cautiously, keeping concealed well by winding amongst the bluffs, following ravines, &c., and at 4 p. m. met scouts I had sent out to locate the village, and they reported no signs, and I went into camp. During the night it turned suddenly quite cold and snowed some four inches.

Believing no large body of Indians could have escaped observation from the second scouting party, and that some mistake had been made by the first, the next morning I ordered the command to move slowly back on our trail. I took six of the scouts, giving three of them an extra animal and rations, and thoroughly scoured the country adjacent to the point where the hostiles had been reported as having been seen; finding nothing which justified any further retention of the command I sent Interpreter Fleury and two Indians "I had prepared for the trip" forward to complete the scout first ordered to the Little Missouri, &c., and rejoined my command and reached my tents at Powder River on March 14. During the trip some of the men were slightly frosted, but none seriously injured.

On the 17th, I asked for some Cheyenne scouts, and six were sent me, reaching my camp on the 19th. No suitable interpreter was sent with them. I asked to have one sent, but was informed, for misconduct "Sourmole," the only one at Keogh, had been discharged, and would not be re-employed. I sent for him to join me at my personal expense, as I deemed it very important and necessary that a perfect understanding should be had with these Cheyenne scouts. I told them of my orders; that I must capture or kill these hostiles; that possibly, by going with me, they could save their kinsfolk, that if I could surprise them and capture their stock, it might open their ears and they would surrender without fighting; if I could not surprise them, then, when I got very close, they could go into the camp, represent the danger of an engagement, the number of troops out after them, the extreme difficulty of crossing the streams to the north, and the indifferent welcome which they would probably receive from the Sioux; that the hostiles had left their agency in the south for reasons which I did not fully understand and could not explain to them, that it was claimed they had committed atrocities along the line of their march, and I knew some whites had been killed by them; that Little Wolf had been an enlisted scout under my command, and I thought would have confidence in any message he might get from me. I also said I had recommended that these hostiles be allowed to go to the Arapahoe Agency, but I could make no promises in regard to it. I could only say give up ponies and guns, and I would not fight them. That, if after this understanding, they (the Cheyenne scouts) did not feel they could act earnestly in the matter with me, they could go back to the post.

One of the head-men replied that to shoot at these people (the hostiles) would be like going back and firing at the children in his own lodge; the other, Brave Wolf, said that he was a soldier, and though he had kin in the hostile village, he would do as he was ordered. I derived a perfect understanding with these scouts, as I felt they would be the means through which I must, in any event, at first communicate with the hostiles to secure a surrender either before or after a fight, and I hoped to secure a victory without loss of life, keenly appreciating the fact, however, that a victory gained at the expense of deception would indeed be dearly bought. I had just concluded

He thought you were still there and would look out for him. They gave up their guns, and then the whites killed them all. I am out in the prairie, and need my guns here. When I get to Keogh I will give you the guns and ponies, but I cannot give up the guns now. You are the only one who has offered to talk before fighting, and it looks as though the wind, which has made our hearts flutter for so long, would now go down. I am very glad we did not fight, and that none of my people or yours are killed. My young men are brave, and would be glad to go with you to fight the Sioux."

One or two others followed with similar remarks. They were suspicious, and the idea of giving up guns at once startled them, and in the fear of this to them immediate danger, forgot the future, and failed to ask me any questions about staying in the northern country. I therefore held them to the terms as long as I deemed judicious, and then compromised on my wagons as the place of giving up guns, to which they agreed. I felt that from this time out they could camp where I told them, and I could reverse our present position; and though I had no fear whatever of any trouble, I deemed it best to secure this advantage at once. I therefore told them to pack up and we could move out a short distance this afternoon. We moved about six miles and camped. I issued them some rations, and Dr. Sabin kindly looked after their sick and cared for their wounded; and by the time we reached our wagons, a great deal of confidence had been restored and good feeling nearly established.

At this point they surrendered the following arms: 4 Springfield carbines, caliber 45; 3 Springfield rifles, caliber 50; 4 Sharp's carbines, caliber 50, 1 Sharp's rifle, caliber 50; 4 Sharp's rifles, caliber 45; 1 muzzle-loading rifle; 3 Winchester-Henry repeating carbines, caliber 45; 3 Colt's revolvers, caliber 45; 2 Smith & Wesson revolvers, caliber 45; 5 Colt's revolvers, caliber 44 and 31, and 1 Remington revolver.

They had expended a good deal of ammunition since they surrendered, as I had allowed them to hunt each day. I permitted the matter to rest as though I was perfectly satisfied and convinced that all arms had been given up. I however told some of my scouts to examine privately after arms, and secured the services of Brave Wolf's brother, a young man in Little Wolf's band, to ascertain if any arms had been withheld; none could be found in this way.

On the morning of April 1, about six miles from post I halted the command. I had ordered Lieutenant Tillson with his detachment to remain in rear of the Indians; ordered Lieutenant Kingsbury with his company pretty well out to the right, and company E, Second Cavalry, to the left, thus quietly forming a sort of hollow square, with enlisted scouts in front, and apparently as the accidental result of a halt for the Indians to close up. I then called Little Wolf and all his men to me, and they formed, as usual, in a circle around me, seated on the ground. I told them that the orders were positive and imperative in regard to arms; I had no option in the matter; that I must not only satisfy myself, but I must take such measures as would satisfy those who issued the orders in regard to the terms through which they secured peace. Enumerating the arms surrendered when I reached the wagons, and that it was only natural to suppose that 31 men would have more than 30 stand of arms; that at that time some of them were troubled with suspicions and distrust, and it was perfectly natural they should try and retain some of their arms to protect themselves from the imaginary dangers, and those who had so retained arms must now give them up. They said they had given up all they had. I asked them if they could all arise, throw back their blankets, and show me that none of them had arms on their persons; they said they could, and did. I then had my scouts examine every pack and bundle, and they could find no arms. I had concluded that if they had any pistols they would naturally wear them on the day of reaching the post, as, of course, there would be more or less uncertainty in their minds as to what disposition would be made of them, and that this measure would effect as complete a disarmament as could be secured.

I reached the post at 11 a. m., and camped the two companies with the Indians, awaiting further instructions.

While the command was out the thermometer indicated 33 below zero; it has snowed and rained, and the ice has gone out of the streams, leaving them swollen, difficult and dangerous to ford.

No men were lost, and but two condemned quartermaster's horses abandoned; and the stock generally is in better condition to-day for a long trip than when I left the post.

I desire, in conclusion, to express my sincere thanks to Lieutenant Kingsbury, commanding Company I, Second Cavalry, Lieutenant Tillson, commanding the detachment of 30 men and artillery squad, and Acting Assistant-Surgeon Sabin for the prompt, hearty, and efficient manner in which they have carried out all my orders, performed all duties while on the campaign, the cheerful and uncomplaining way they have endured all its hardships.

I cannot speak too strongly in praise of the prompt and willing way in which the men of the command have performed every duty, and the earnest, sincere, and efficient manner in which the Indian scouts and interpreters, both Sioux and Cheyennes, have

aided and assisted the campaign to a successful termination, for without their aid and hearty co-operation, as I have before reported, I could have done nothing.

I am, sir, very respectfully, your obedient servant,

W. P. CLARK,
First Lieutenant Second Cavalry.

Post ADJUTANT,
Fort Keogh, Mont.

HEADQUARTERS FORT KEOGH, MONT.,
April 6, 1879.

SIR: In transmitting the report of Lient. W. P. Clark, Second Cavalry, to department headquarters, I beg leave to call attention to the admirable and successful manner in which the scout was prosecuted by him. It is particularly gratifying at this time, in view of the difficulty which has attended in some cases the management of captive Cheyenne Indians, that this band was recaptured without firing a shot.

Very respectfully, your obedient servant,

GEO. GIBSON,
Major Fifth Infantry.

The ASSISTANT ADJUTANT-GENERAL,
DEPARTMENT OF DAKOTA,
Saint Paul, Minn.

I have already called the attention of my superiors to the excellent conduct of Lieutenant Clark, and I desire again to express my obligations to him for his extremely meritorious service.

By far the most important military event which has occurred in the department during the present year is the movement of Colonel Miles from Fort Keogh across the Yellowstone and the Missouri to the British boundary.

A full understanding of the manner in which the movement originated, and of the objects sought to be attained by it, can be best obtained from the following correspondence between the Department of the Interior, the War Department, the General of the Army, the division commander, Colonel Miles, and myself, viz:

DEPARTMENT OF THE INTERIOR,
Washington, May 12, 1879.

SIR: I am in receipt from the Commissioner of Indian Affairs, under date of 10th instant, of a copy of communications, herewith inclosed for your information, dated Fort Peck Indian Agency, Poplar River, Montana, April 19, 1879, from Agent Bird, in which he states that companies of hostile Indians from Sitting Bull's camp are scattered over the entire northern part of that reservation; that the agency Indians complain bitterly of the encroachments of these Indians upon their hunting-grounds; also that the agency buildings and property at Poplar River and Wolf Point are unprotected.

In relation to the danger threatening the agency property at the points named, the Commissioner requests that troops may be furnished for the protection of the goods and property of the agencies as well as for the security of the reservations and the hunting-grounds of the Indians and to prevent the destruction of the buffalo and other game necessary for the subsistence of the tribes.

I concur in the request of the Commissioner, and recommend it to the favorable consideration and action of the honorable the Secretary of War.

Very respectfully,

C. SCHURZ,
Secretary.

The Hon. SECRETARY OF WAR.

UNITED STATES INDIAN SERVICE,
FORT PECK INDIAN AGENCY,
Poplar River, Montana, April 19, 1879.

SIR: In a communication I sent you, dated 10th of February last, and in my monthly report for March, dated March 31, I informed you that Sitting Bull's Indians were scattered over the Indian reservation in camps of half a dozen to one hundred lodges from the mouth of Milk River to Wood Mountain police station.

I now have the honor to recur to the same subject, and desire to call your attention in an especial manner to the fact that the companies of hostile Indians from Sitting Bull's camp are now scattered out, occupying the entire northern part of the reserva-

tion. Our agency Indians are coming into the agency now daily, and complaining bitterly of the encroachments of these Indians on their hunting grounds. They say they find Uncapapas from Sitting Bull's camp everywhere, driving and scattering the buffalo and other game, so that it has become a matter of real difficulty for them to obtain buffalo enough for their subsistence. They further complain that these Indians steal their horses and run them off over the boundary line.

I believe there is no doubt at all that Sitting Bull is now on American soil, and has been camped south of the boundary line since the middle of February last, and that practically *all his Indians* are now south of our northern boundary, there being, as they claim, no game for their subsistence on the Canadian side.

I call your attention in this special manner to this state of things in regard to these hostile bands of Indians, believing that you would, with a knowledge of the facts before you, call the attention of the proper authorities to the subject, that some attention may be given to the matter, and the Indians and people and property of this Indian agency be protected from their encroachments and possible raids.

A more unprotected condition than now exists of the buildings and property of the agency, at both Poplar River and Wolf Point, cannot be conceived. Certainly no more property should be delivered and stored at either place without some additional protection is afforded by the proper authorities.

I am, very respectfully, your obedient servant,

W. BIRD,
United States Indian Agent.

Hon. COMMISSIONER OF INDIAN AFFAIRS,
Washington, D. C.

[First indorsement.]

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
Washington, May 22, 1879.

Official copy respectfully referred to Lieut. Gen. P. H. Sheridan, commanding Military Division of the Missouri, for such action as the case calls for, in his judgment.

By command of General Sherman.

E. D. TOWNSEND,
Adjutant-General.

[Second indorsement.]

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,
Chicago, May 26, 1879.

Respectfully referred to the commanding general Department of Dakota for his information and such action as may seem to him advisable.

By command of Lieutenant-General Sheridan.

GEORGE A. FORSYTH,
Lieutenant-Colonel and A. D. C.

[Telegram.]

HEADQUARTERS DEPARTMENT OF DAKOTA,
Saint Paul, Minn., May 30, 1879.

ADJUTANT-GENERAL DIVISION MISSOURI, *Chicago:*

Referring to the communication from the Interior Department to the War Department regarding the presence on our side of the line of parties from Sitting Bull's camp and the complaints which our own Indians make against them, which was referred to me by you on the 26th instant for such action as might seem to me advisable, I desire to represent to the Lieutenant-General that I see no way of putting an end to the annoyances of which our Indians complain except by organizing a strong column at Fort Keogh and sending it north of the Missouri to clear the country.

This being done, the establishment of a summer camp of moderate size, at the Poplar Creek Agency, would probably keep the country free from intruders. But under existing orders I am not at liberty to take this course.

The Lieutenant-General will doubtless recall the orders given by the General of the Army in February, 1878, when I proposed to send Colonel Miles up to the same region.

I respectfully ask instructions.

TERRY,
Department Commander.

[Telegram.]

CHICAGO, May 31, 1879.

to organizing a column at Keogh to clear the
the Indians, was received and forwarded for
the absence of the Lieutenant-General.

GEO. A. FORSYTH,
Lieutenant-Colonel and A. D. C.

[Telegram.]

CHICAGO, May 31, 1879.

[Ann. :]

from the Adjutant-General:
eral.

GEO. A. FORSYTH,
Lieutenant-Colonel, A. D. C.

"WASHINGTON, D. C., May 31, 1879.

no objection to the course suggested by General
are not now prepared to build posts, or main-
between the new post Assinaboine and Buford.
rations or a temporary cantonment at Poplar

"E. H. TOWNSEND,
"Adjutant-General."

[Telegram.]

ADQUARTERS DEPARTMENT OF DAKOTA,
Saint Paul, Minn., June 5, 1879.

General of the Army to send a column north of
bands of hostile Sioux which have come across

presence of the intruders. The task will be a
so necessary to distinguish most carefully be-
, and to so conduct operations as to create no
sirable to force the Sioux back rather by a dis-
I desire you to take command in person. You
at Custer in addition to all the forces that can
transportation at Custer, except what will be

the Missouri. This depot will be supplied from
infantry can be sent from Buford to guard it.
posed to establish a summer camp of moderate

ly confidential, and telegraph to me when you
can take, and where you would like to have a

TERRY,
Brigadier-General, Commanding.

report as commander of the district of
narrative of his operations under the

STERS DISTRICT OF THE YELLOWSTONE,
Fort Keogh, Mont., September —, 1879.

[Ann. :]

red a telegraphic order from the department
Commissioner of Indian Affairs, and concurred

in by the Secretary of the Interior), directing me to take the available force from the District of the Yellowstone and move north of the Missouri, to separate our friendly from the hostile Sioux Indians and to clear out those who had moved south of the boundary line; after driving them back, to establish a summer camp north of the Missouri.

On the 23d of June, preliminary to the movement of the troops, I sent Colonel Whistler to the Poplar Creek Agency to ascertain the cause of trouble there. He reported the Indians almost without food and complaining of the trader's charging exorbitant prices for his goods. By my direction he crossed the entire Yanktonian camp of between three and four hundred lodges to the south side of the Missouri.

By executive order, the reservation of this tribe of Indians had been extended south to the Yellowstone; on that part of their reservation they found abundance of game and were at once satisfied.

The tribe of Aminaboinea, that have for years been annoyed by the Sioux, were moved south so as to be in rear of the command when it moved north of the Missouri River. Twenty of their number enlisted as scouts; their knowledge of the country was found valuable.

In accordance with the order of the department commander, the command, composed of seven companies of the Second United States Cavalry, and seven companies of the Fifth United States Infantry, a detachment of artillery, and friendly Indians and scouts, with the necessary transportation, left the Yellowstone River at Fort Keogh July 3 and 5, 1879.

On the 10th, 11th, and 12th, this command crossed the Missouri at Old Fort Peck. At that point my force was increased by 94 recruits and two companies of the Sixth United States Infantry; the latter as guard for the supply depot. Completing the equipment of the command for the field, I left Fort Peck on the 15th day of July, with the organization heretofore mentioned, numbering 33 officers, 643 enlisted men, 143 friendly Indians and enlisted scouts, moving north from the Missouri, passing up on the south side of Milk River, and on the 16th reached Campbell's House. The same day, the Cheyenne and Crow scouts, under Lieutenant Clark, arrested a party of French half-breeds, and ascertained that some 400 Sioux warriors had been near his camp the day before. The half-breeds falsely reported that there were no Sioux south of Milk River, and that they had all returned to their camp near the Canadian line on Frenchman and Little Rocky Creeks.

On the morning of July 17, 1879, Lieutenant Clark, with a detachment of Indian scouts and Lieutenants Borden's and Hoppin's companies, were sent up Beaver Creek to look for half-breed camps and any signs of hostile Indians, the main command moving four hours later. At 12.30, a report was received from Lieutenant Clark that a party of some 400 hostile Sioux had been discovered about five miles up Beaver Creek and that he was about to engage them.

The impetuous attack of our friendly Indians, followed by the vigorous charge of the troops, resulted in driving the Sioux some 12 miles across the plain between Beaver Creek and Milk River, compelling them to abandon much of their property. When near Old Fort Browning (an abandoned trading-post), the Sioux made a stubborn resistance, and, being re-enforced, for a time pressed the small command from all sides. Lieutenant Clark had, however, taken up a strong position, and as the main command had been moved forward rapidly, the Sioux, under Sitting Bull, fled to the north side of Milk River and in the direction of head of Little Rocky Creek, leaving eight of their dead behind them. This affair was followed by the command crossing Milk River at Old Fort Browning, and moving up Frenchman's Creek west of the trail to the only ford at Old Fort Turney. The trail was then followed to where it crossed the Canadian line near main branch of Little Rocky Creek.

On July 23, 1879, Major Walsh, of the Northwestern Mounted Police, visited my camp immediately south of the line, and was informed of the object of our movement and the occasion of so large a force of troops being on the boundary line, namely, the depredations and trespasses committed by Indians from the Canadian side, and who had been pursued to that point. He stated that he believed no depredations would be committed in the future. After his departure the command moved down Rocky Creek to head of timber.

On the 26th of July, Major Walsh, of the Northwestern Mounted Police, came to my camp, accompanied by a representative of the hostile Sioux named Long Dog, an Unscapa, who has for years been regarded as a man of much influence among the hostiles. In answer to a question as to "whether the Sioux had chosen their country, and on which side of the boundary they intended to remain," turning to Major Walsh, he said: "We intend to remain with him." Major Walsh stated they had given him the same answer, and told him that they would send out no more war parties. He also assured me that no apprehension need be felt that any hostile movement would be made south of the line. I regarded this as the best results that could have been attained, and the assurance worthy of confidence.

I am gratified to say that up to the present time the promises then and there given have been

rigidly adhered to; not a single act of hostility has been committed or a dollar's worth of property stolen by those Indians to my knowledge.

From all the information I have gathered during the past three years from reliable men who have been frequently through their camps, from traders and half-breeds, as well as from American and Canadian officers, the strength of that camp numbers between 6,000 and 8,000 souls, with between 12,000 and 15,000 horses, divided into four large camps: The Uncapapas, under Sitting Bull; Black Moon, Long Dog, and Pretty Bear; the Minneconjoux, under Black Eagle; the Sans Arcs, under Spotted Eagle, and the Ogallallas, under Big Road or Broad Tail.

As this large body of Sioux is composed of the worst Indians of the Northwest country, I consider the fact of their being driven out and their becoming expatriated by their own acts as more important and satisfactory than would have been their unconditional surrender.

This country is now free from their depredations; we avoid the expense of supplying them with food and clothing, and there need be no difficulty in keeping them out of the country in future.

After the above had been accomplished, a battalion of cavalry, under Major Baker, was dispatched to the junction of Frenchman's Creek and Milk River, with a force under Lieutenant Clark well out to the west. Lieutenant Randall's, Captain Oven-shine's, and Major Gordon's commands were sent east to Porcupine and Poplar Creeks. The commands in one week arrested 829 half-breeds, who were intruders upon our Indian reservation. Their camps had been places of refuge for war and stealing parties and for illegal traffic. Those who belonged north of the Canadian line and were British subjects, together with a small camp of 20 lodges, non-treaty Cree Indians from the Saskatchewan, were sent north of the boundary line; those who belonged in north-western Dakota, near Morehead and Turtle mountains, were sent east to Fort Buford; and the remainder—158—sent south of the Missouri River and located in Judith Basin.

Those sent north of the line have given no further trouble. Those sent to Judith Basin are contented, well pleased with the country, and are anxious to take up land, make themselves homes, and abandon their nomadic life.

Since the return of the command, I have been informed that a part of those sent to Buford were liberated, and that they returned in the direction of Poplar Creek, where they were arrested. I regret this; for if they are allowed to trespass upon ground from which every American citizen or British subject is debarred, this camp will become again the nucleus for the roaming and disaffected bands as well as a place of refuge for the lawless.

During the time thus occupied, information had been sent me of the escape of a band of Indians under Fast Bull, who belonged at the Lower Brulé Agency; also, of their having committed depredations near the Black Hills and the Upper Little Missouri in their movement north to join Sitting Bull's camp. To intercept this body of Indians, I dispatched Colonel Whistler with five companies of the Fifth Infantry, with one light Hotchkiss gun, to watch the crossing of the Missouri between Wolf Point and Poplar Creek. This movement was promptly made, and his command placed at available points along the river, with his scouts some 60 miles on the south side of the Missouri. From information given by them and some friendly Yanktonnai Indians, Colonel Whistler learned of the approach of the band to the Missouri near Poplar Creek.

Making a forced march, on the 10th of August, he arrived in time to surprise the band just as they had crossed the Missouri and to compel their surrender without the loss of a single man or horse.

Fast Bull's band numbered 57 men, women, and children. They were disarmed and dismounted, and sent down the Missouri to Fort Lincoln by steamer General Sherman.

In accordance with instructions to withdraw the command from the country north of the Missouri, the command marched back in three columns: that under Colonel Whistler, from Wolf Point to Fort Keogh; Major Baker's battalion via Fort Peck and the Big Dry Forks; and Major Gordon's command via Beaver and Fourchette Creeks to mouth of Musselshell, thence up that valley across to Terry's Landing to Fort Custer.

The command returned in excellent order, having carried out to the full extent the letter and spirit of the orders of the department commander, and accomplished even more than was originally contemplated. * * *

I have the honor to remain, very respectfully, your obedient servant,

NELSON A. MILES,

Colonel and Brevet Major-General, U. S. A.

The value of the results obtained by Colonel Miles can hardly be over-estimated. The hostile Sioux, who in 1876 found an asylum in British territory, had been permitted by the Dominion Government to repair all

ERS ACCOMPANYING THE

as, and equipments which they suffered in the end to completely prepare themselves again for knowledge that they possessed close at hand in soil, to which they could retreat in case they which they could not cope, they had invaded body, and had covered with marauding parties boundary and the Yellowstone River, and from nearly to Fort Buford on the east. Horses and settlers had been murdered by them, and I regret inadequate efforts on the part of the Dominion obligations which that government assumed to give a refuge from the military forces operating adequate efforts to prevent this armed invasion of by neighbor. Now it is believed that not a host of the boundary, and, to quote again the language of the boundary, and, to quote again the language, "This extensive country has been again cleared of the scattered settlers and travelers in it are as in the States of Kansas and Minnesota."

and accurately comprehending the purposes of the objects sought to be accomplished, and conforming to the instructions which he had received, by a enterprise and audacity, prudence and foresight, these results without the loss of a single soldier.

As a result of his operations in forcing the hostile party, there is good ground for the belief that a greater importance has been produced—a moral gain, and will tend to preserve the peace of the frontier.

Lieutenant Colonel Miles and his officers and men thus perform an important service which they have rendered, and their services will receive a just recognition from higher authorities.

Attention to the services rendered by Lieutenant Colonel Miles and his troops in the capture of Fast Bear and his party is given in Lieutenant Colonel Miles's report.

The work has been vigorously prosecuted on the Northern Pacific Railroad. This division, commencing at Bismarck, extends one hundred miles to the north. Eighty miles of road-bed have been completed, and track laid for fifty miles. The work is still being

pushed forward by the surveying and working parties along the frontier from the garrisons of Forts Lincoln and Buford. These companies have been distributed and moved from point to point as different sections have been finished. They will be recalled to their original posts as the season sets in. It is possible that the railroad construction work during the coming winter at and near the mouth of the Little Missouri. Should they do so, it would establish a small cantonment there for the protection of the frontier.

In the annual report from the department, the construction work had been commenced. Work upon it was discontinued for the post were exhausted. Requisitions have been set apart for that purpose, work has been commenced, and it is expected that before the commencement of winter the

buildings for a garrison of four companies of infantry and six will have been completed. I have not personally inspected all reports regarding it concur in saying that it will be one of the most comfortable posts on the frontier. Preparations for the construction of the new post authorized to be built at the foot of the northern slope of Bear's Paw Mountains (Fort Assinaboine) were begun in the season by sending the Eighteenth Infantry, then just from the department, to the selected site.

The regiment embarked on steamers at Bismarck, and after a pro- longed voyage up the Missouri reached "the Coal Banks," the nearest point on the Missouri to the site of the new post. Leaving two companies at the Coal Banks as a guard to the stores and supplies to be used there, Colonel Ruger, with the remainder of his regiment, proceeded to the new post and commenced preparations for building. On account of the scarcity and high price of lumber in that region it was determined to build of brick, and the necessary supply of this material was contracted for, but much time was necessarily consumed in the manufacture of the brick well started, so that, although preliminary work was previously done, the erection of the post was not fairly commenced until late in June.

The work has been prosecuted with energy, and an excellent post will have been substantially completed before the

present season is now and will be for many years to come a very important one. It should be enlarged so as to afford quarters for a garrison of sixteen companies. Colonel Ruger has recommended an additional appropriation for it of \$125,000. I think that this sum is more than absolutely necessary to do the work proposed, but I earnestly recommend that an additional appropriation of \$100,000 be asked for. I recommend that an appropriation of \$200,000 be asked for to build another post in the valley of the Milk River or upon some one of its tributaries. A post in this vicinity is urgently needed to complete the chain which stretches along the northwestern frontier from the mouth of the North toward the Rocky Mountains. The posts forming this chain are Forts Pembina, Totten, Buford, and Assinaboine. Between the two last named is an interval of more than thirty miles; the crow flies; and midway of this interval is the great route of invasion pursued by the Indians coming from the hostile camps in the north of Canada to the valleys of the Missouri and the Yellowstone, and to the agencies of kindred bands in Dakota.

As the prospects for peace on the northwestern frontier are bright since the successful operations of Colonel Miles, it yet would be wise and imprudent to neglect any precaution—any measure which would enable us to confront on the threshold a report of an attempt to invade our territory. To fill the gap between Assinaboine and Buford by building a large post in the lower Milk River is one measure of preparation which the situation imperatively demands. Such a post should be built for a garrison of not less than sixteen companies; preferably it should be for sixteen companies. A reconnaissance has been made to determine what resources the lower Milk River affords for the construction of a post; but I am unwilling to the scarcity of suitable timber it would be necessary to build of brick, and whether this would be necessary or not, brick building in the rigorous climate of that region would be by far the most

A sum of \$200,000 would be sufficient but not more than sufficient

for a post to be garrisoned by twelve companies, and it probably is as much as could be profitably expended on a post in any one year.

Should the Northern Pacific Railroad be opened to the Yellowstone River during the coming year, it will probably be necessary to occupy at least one point between that river and the Missouri with a garrison of moderate size. I recommend that this probability be kept in mind in estimating for the expenditures of this department during the next fiscal year.

At the date of the last annual report, work had been commenced on the military telegraphic lines connecting Forts Stevenson, Buford, and Keogh with Bismarck, and the line from Fort Keogh to Deadwood. These have since been completed as also the lines from Fort Keogh to Fort Custer and Fort Ellis; from Helena to Fort Shaw, Fort Benton, and Fort Assinaboine, and from Fort Lincoln to Fort Yates. The continuation of this latter line to Fort Sully is nearly completed. Work has also been done on the lines connecting Helena with Fort Missoula, and Fort Bennett with Fort Yates and Fort Meade; but for want of sufficient transportation it has been found impracticable to complete the lines from Fort Bennett to Fort Meade during this season. The others will be in operation before the close of the year.

The labor of digging holes and setting poles has all been done by the troops, and in some instances they have also cut the poles. The transportation of poles and other material has been furnished principally by the Quartermaster's Department.

The private line from Fort Ellis to Helena, by which the line between posts on the Yellowstone is connected with those in Northern and Northwestern Montana, has been purchased by the government.

I transmit herewith the annual reports of the district and post commanders serving in the department; also the reports of the chiefs of staff departments at these headquarters, and I invite attention to the recommendations therein contained. I especially invite attention to the recommendation of the chief commissary of subsistence that all of the annual supplies for the posts in Montana Territory be sent forward in the early spring. An experience of six years in this department convinces me that it is not good policy to delay until summer the sending forward of any stores destined to these posts. I also concur in the recommendation of the chief commissary of subsistence in regard to the method of making contracts for beef cattle for the use of troops in the field. The plan which has been pursued this year has failed to give good results. In my judgment in nine cases out of ten it will fail.

I desire to express my obligations to the district and post commanders, as well as the staff officers serving at these headquarters, for the able, faithful, and zealous manner in which they have discharged their respective duties during the year.

I am, sir, very respectfully, your obedient servant,

ALFRED H. TERRY,
Brigadier-General, Commanding.

THE ADJUTANT-GENERAL OF THE
MILITARY DIVISION OF THE MISSOURI,
Chicago, Ill.

REPORT OF BRIG. GEN. JOHN POPE.

HEADQUARTERS DEPARTMENT OF THE MISSOURI,
Fort Leavenworth, Kans., October 3, 1879.

COLONEL: I have the honor to submit the following report of affairs in this department for the past year:

INDIANS.

The band of Northern Cheyennes, which at the date of my last report had broken away from their agency in the Indian Territory, and were on their way north, succeeded in effecting their escape from this department and crossing the Platte River. It is not necessary to set forth the reasons for their escape. The proceedings of a general court-martial on some of the officers engaged in the pursuit have sufficiently set forth the facts for any purposes of the government.

Part of this band was surrounded and captured in Nebraska and confined at Camp Robinson, from which post they attempted to escape and the larger part of them were killed. The small fragment left was sent back to this department, and all the men (seven in number) were by order of the War Department turned over to the State authorities of Kansas for trial, having been first identified as participants in the murders committed by the band within the limits of the State. They are still in confinement at the State prison, and it is understood will be tried in October.

The remainder of the Northern Cheyennes at the agency in the Indian Territory have been very restless and discontented for a long time, and, under Little Chief, are, in my opinion, ready at any favorable time to break away to the north. I do not consider their feeling or status at all satisfactory, and I am omitting no precautions which I have the right to take to provide against an outbreak. The force of cavalry in this department is wholly inadequate for anything like complete security against the Indians in the Indian Territory. I have repeatedly urged an increase of cavalry force, and stated in full the necessities of the case, but thus far it has been found impracticable to furnish it.

I do not believe, from the official information I have on the subject, that the removal of the Comanches and Kiowas from the Sill Reservation to the Wichita Reservation will be satisfactory to the Indians or beneficial to the public interests. If, however, the Indian Department be held responsible for the consequences, I shall have nothing to say, but I do most respectfully submit that, as the military authorities have opposed this removal to the full extent of official propriety and for reasons which appear to them sufficient, they should in no sense be blamed for any evil results that may follow the removal.

The bands of outlaws and horse thieves who have always infested the Indian Territory have of late greatly increased in numbers and boldness, and, under the orders of the War Department, I have three cavalry companies scouting the eastern part of the Territory to hunt them down if possible. Most of the inhabitants of that region, however, are in such a state of terror of these outlaws, that no information concerning these bands, or individuals of them, can be procured from them, and the troops will have a long and difficult task before them.

INVASION OF INDIAN TERRITORY.

During last spring there was some excitement (much more in the East than here) about a proposed invasion of the Indian Territory for occu-

pation and settlement. Misled by absurd notices and proclamations put forth by a man named Carpenter, a good many honest and worthy people did begin to move south for the purpose of entering upon the lands in the Territory under the belief that they had a legal right to do so; but in every case, when properly notified that they would violate the law by such a movement, those of them who had entered the Territory returned, and those who had not reached the line turned back. There is no doubt that the whole excitement was created for certain local interests not worth while to set forth; and was stimulated by parties interested for purely speculative purposes. The whole affair faded out as soon as the purposes of the government were known, and it was made manifest that the proceeding would be arrested by force if necessary. Some infantry force is still kept at points along the northern line of the Territory, but as there is no likelihood that further movements into the Territory will be made this winter, it is probable that this small force can be withdrawn for the winter very soon. It is, however, not improper to say that as the whole of the eastern portion of the Indian Territory constitutes one of the finest agricultural and pastoral districts of the country, is a most attractive region to the white emigrant, and is only sparsely occupied by tribes of Indians who make little use of its productive capacity, the government must expect and in my opinion should be prepared to meet greater difficulty every year in preserving it to the occupation of the Indian tribes. This section will support, when properly cultivated, some millions of civilized people, and greatly add to the productive wealth of the country. That it is coveted by people desiring to emigrate from all parts of the West is beyond question, and it is equally certain that every means will be resorted to to acquire a foothold in it and its virtual possession by the whites. To illustrate its great area, and the very insignificant manner in which it is now occupied, I submit, inclosed, a tabular statement showing the area occupied by the Indians, who make little if any use of the soil, and a comparison in that respect with the populous States east of it. To hold it in secure and unmolested possession of the Indian tribes now there will require a larger force every year, and before long a continuous cordon of posts near together and entirely surrounding it. I merely set forth the situation as it is that the government may be prepared for increasing demands for the protection of the Indian Territory against emigration of the whites and a constantly increasing military force to that end.

THE UTE.


The state of affairs in Western Colorado has now reached a condition when it is no longer possible to leave the Ute Indians where they are, without constant collision and outrage on both the part of the whites and Indians. Not only is the great Ute reservation in Southwest Colorado a valuable agricultural district, and quite essential to the support of the large population pouring into that region, but valuable mines, said to be much like those at Leadville, have been discovered on the Gunnison River, within the limits of the Ute reservation. It is easy to anticipate the result of leaving these Indians in occupation of valuable mineral and agricultural lands in a section of country into which white emigration is pouring with its usual energy, and which presents attractions wholly irresistible to the white emigrants of this country. Whatever effort the government shall make with the military force to arrest this movement into the valuable mining districts within the Ute reservation, must be, to a large degree, futile, and beyond doubt prejudicial

to the interests of the government as well as of the State of Colorado. The relations between the Indians and whites under such circumstances is certain to lead to numerous acts of violence and wrong, committed by both sides, and wholly incapable of redress. The consequences of such a condition of affairs nearly always fall upon the innocent and helpless; both red and white people suffer alike in such an environment.

The time has certainly come, in the case of the Utes, when the safety of both Indians and whites demands some change of location for the Indian to lands which offer no such temptation to the whites. The agricultural and rich mineral lands embraced within the present Ute reservation are of no value to the Indian. He neither mines, nor, to any appreciable extent, farms, and a country abounding in game and grazing, and in every way suited to his simple life, would be far better for him and far more secure to his possession. Thoroughly impressed with these opinions, I invited the attention of the government, long since, to the propriety, indeed the necessity, of removing the Utes outside of the State of Colorado, and of consolidating their agencies and reservations into one, to be located on the headwaters of the West Fork of the Chama and along the valley of the Navajo River. That country is fully described in my annual report of last year, and is perfectly adapted to the wants of the Indians. It was proposed, in the same connection, to establish a considerable military force at Pagosa Springs, on the flank of this reservation, to prevent trouble from or with the Indians, and an appropriation was made last winter for this purpose; but I do not consider it advisable to build the post until it is certain that the Indians will be thus removed. Two companies of infantry are now in cantonment at Pagosa and will remain there this winter.

A commission to treat with the Utes in this view was sent out last year, and an agreement was made with the southern bands (who at present are the only Indians with whom the trouble indicated is likely) to remove to a new reservation which the commission marked out in the southern part of Colorado. This agreement has not yet been ratified by the Senate, and, before such ratification is made, I wish to suggest, as forcibly as I may, that the reservation set out by the commission is in my opinion faulty in several important respects. In the first place, I consider it essential to peace and to the welfare of the Indians, as well as the interests of the government and the State, that this new reservation be, if possible, outside of the State of Colorado. Aside from every other consideration which might be advanced, the public mind in Colorado is greatly excited on this subject, and imperatively demands (and I believe wisely demands) the removal of these Indians to some locality outside of the State, a feeling which is entitled to very high consideration: 2d, the reservation, as marked out by the commission, lies across the roads leading from the east and south into Southwest Colorado, so that all travel in that direction must pass directly through the Indian lands. Of course such an arrangement is unfortunate alike to whites and Indians, and is sure to lead to frequent collisions and incurable discontent on all sides; and 3d, the agreement does not include the White River band of Utes.

I inclose herewith a map showing in *red* the boundaries of the new reservation as proposed by the commission, and in *blue* the boundaries I propose, and which seem to me to cover the necessities much better. I hope sincerely on every account that in acting upon the agreement of last year between the Utes and the commission to treat with them, the lines of their new reservation as suggested by me will be adopted in preference to those proposed by the commission. Early attention should



be given to this subject, as the relations between the emigrants and the Indians are becoming every day more critical, and although I do not believe that any such thing as a general war is at all likely, yet it is quite out of the question that things can be left long as they are without serious troubles and collisions, leading at times to loss of life.

THE APACHES.

The Apaches in Southern New Mexico and Arizona are much as they have been, and probably will continue to be until removed entirely from that region. They are a squalid, untrustworthy people, robbers and thieves by nature, and with less form of government than any Indians in this country. They continue to break out from time to time in small parties or individually, and rob and steal in a small but very irritating way. It is about as difficult to watch them as it is a thief in one of our great cities. They require to be hunted down by small detachments over a large region of country, and give the troops more hard service and the government more expense than tribes ten times more formidable both in numbers and warlike capacity.

It is not possible to go into details about the doings of these Indians or the operations of the troops against them without extending this report beyond reasonable limits. It will be sufficient to say that they have not done much harm, except in a small way, and that the troops are in the field most of the time to prevent this. The Mescalero Agency, near Fort Stanton, serves at present a very good purpose in furnishing a convenient and satisfactory scapegoat for all Indian, or supposed Indian, troubles which occur anywhere in Western Texas. I venture, however, in the case of this Indian reservation, to express the very confident belief that the cause is wholly inadequate to the disease, and that no more raiding of any kind is done from the Stanton reservation than from any other Indian reservation in the country. I trust that, as soon as the necessities of the case elsewhere will admit of it, the Indian reservation near Fort Stanton may be permitted to return to its original obscurity and insignificance.

MILITARY POSTS.

The military posts in this department are generally in good condition. Some of them, by reason of changed circumstances, no longer fulfill any important military object beyond the shelter of troops, and could be dispensed with if accommodations for their garrison could be had elsewhere. Larned, Hays, and Lyon are no longer needed for military defense of the frontier, although the troops now occupying them are at times entirely necessary for this service. The posts themselves are out of position for prompt use in any prospective troubles with Indians; so far out of place that it is not easy to use their garrisons at points where the only Indian troubles are at all likely to occur in the future. One important and well-located point in Western Kansas only is necessary for the protection of that frontier, which, if well garrisoned by an effective force, would accomplish, and accomplish far better and more economically, the objects for which the four posts of Lyon, Wallace, Hays, and Larned were established. That point is Fort Wallace, which commands all the routes traveled by Indians to and from the Indian Territory in the south and the Indian reservations north of the Platte. A glance at the position of this post and the trails leading near it will show this fact.

I desire, therefore, to build at Wallace quarters for at least six companies, four of cavalry and two of infantry. It is now garrisoned by only two companies of infantry. By removing the buildings from Hays to Wallace, ample shelter for this force can be provided at Wallace, and with small expense. I ask authority to do this with the troops, and that a small sum, which I will indicate hereafter as we may find it necessary, be allowed for this purpose.

Contracts have been made for building a four-company post at El Paso, Texas, already named Fort Bliss, by order of the Secretary of War. It will be completed as rapidly as possible. The whole cost of the post under the contracts will be within the sum appropriated by Congress for the purpose.

Concerning Fort Lewis, to be built near Pagosa Springs, Colorado, I have already said enough. The construction of it ought not, in my opinion, to be begun until the location of the Ute Indians be settled definitely, which probably can be done by the 1st of March next.

During last winter it became necessary for the protection of the Kansas frontier to establish a cantonment in the Indian Territory on the North Fork of the Canadian, between Fort Supply and Fort Reno. It is now occupied by six companies of infantry (one mounted), and has served and will serve as an almost complete check to any movements of the Indians in that region toward the north. The troops have huddled themselves, and will get along without suffering this winter, but as this cantonment will be needed and more needed every year, as well for the protection of the Indian Territory against white invasion as for the security of the Kansas frontier against Indians, I ask that an appropriation of \$50,000 be requested this winter to build a permanent post. Whatever may be the condition of the Indian tribes in the future, it is quite certain that this post will be needed to maintain them in possession of their lands, and to protect them against broils and difficulties with the whites, both respectable persons and outlaws.

At Fort Leavenworth new barracks are needed, and have been needed for a long time. The old frame barracks built here many years ago are rotting and becoming dangerous to live in, as well as being a very imperfect shelter for troops. They will not stand much longer and should be replaced by substantial buildings of brick. I ask thirty thousand dollars for this purpose.

TROOPS.

The troops in this department are generally in good condition as to discipline and efficiency. The constant work imposed on them both as laborers and soldiers in the field leaves little of the time possessed by more favored arms of service for drills or other military exercises. It is to be hoped, and indeed always has been hoped, since I have been in the service, that for the interests of the government and the condition and efficiency of the Army, no work as laborers, mechanics, wagon drivers, or other such duties be imposed on soldiers, and that all such labor be performed by persons enlisted or hired for this service. It is scarcely now to be expected that such a hope will ever be fulfilled, but it appears to me that the soldier can be relieved from much of the labor in this direction now imposed on him by increasing the appropriations for such service, even if it be necessary in consequence to decrease them for other necessities. These remarks are specially applicable to the regiments serving in New Mexico, which are either in the field or engaged in labor in no respect suitable to military efficiency for a great part of the time.

I consider it advisable in all respects that from time to time the regi-

ments in this department should be brought in to some such post as this, where a large number of the companies can be concentrated for purposes of discipline and instruction. This post is specially adapted to this purpose, and is, besides, a convenient place for a reserve force, to be used to supply sudden demands for troops both in the Indian Territory and in Western Kansas or elsewhere. This exchange of regiments in turn cannot fail to be of the greatest service to the condition and morale of the troops, and is entirely practicable and safe with the means of communication and transportation at command.

MEXICAN BORDER.

Two years ago when the difficulties concerning the ownership of certain salt lakes near El Paso, in Northwestern Texas, occurred, that part of the Department of Texas embraced within the field of trouble was transferred to this Military Department, and a force was sent from New Mexico which quieted the commotion and has maintained the peace since in that region. Much complaint has been made from Texas, New Mexico, and Arizona of the incursions of Indians from Mexico into those sections of the country, and counter representations have been made by the Mexican minister to this country of the same character, and charging the same offenses upon Indians and whites from the United States. There is no doubt some truth in both statements, but I think not to the extent claimed by either party. Along a very sparsely settled frontier between foreign nations, especially along such a frontier as this, there must of necessity always be found outlaws and thieves—red and white—who make use of the shelter of both countries for plying their vocation in safety. There would seem to be no sufficient remedy for this state of things, unless permission be given for the troops of one country to pursue such marauders into the other. If hot pursuit must cease the moment the boundary line is reached, it is useless to expect effectual results. It is not possible, with any such force as can be furnished, to watch every point on this long frontier, so as to prevent this sort of raiding, and although the limited force for this purpose is employed actively and unceasingly, more or less of these things must, in the nature of things, happen. I consider it very unfortunate, in this view, that certain of our Indian reservations have been located so near to this frontier. It has been found, and I believe is, impossible to keep all the men of an Indian reservation upon it, when all are armed and mounted, and when robbery and raiding are and have been the habits of their lives. A great Indian reservation sparsely occupied by armed and mounted men of this character cannot be guarded like a jail or penitentiary, and, indeed, can scarcely be guarded at all with any efficiency, when the guard duty must be conformed to the effort to give these people almost complete latitude of movement in the hope of civilizing and christianizing them. If they could be disarmed and dismounted and a pressure brought to bear upon them, through military force, to remain on their reservations, no doubt a great deal would be gained in restraining them from such raids, but when we consider the immense difficulty in preventing crime even in our large cities, where criminals or the criminal classes are directly under the eyes and hands of a powerful police, it is easy to understand how nearly impracticable it is on these great Indian reservations, when the government actually furnishes to, or allows to be kept by, the prospective offenders the implements necessary to carry on their evil work.

I invite attention in this direction to a misapprehension under which the commanding general Department of Texas appears to lie in regard to

the limits of this and his own department. The letter of the commanding general of the Division of the Missouri, defining these limits, states as follows, viz: "The jurisdiction of the officer commanding the troops at Fort Bliss is intended to extend to and include the town of San Elizario on the Rio Grande River, and that portion of El Paso County lying north of an east and west line passing immediately south of that place." It is, therefore, apparent that this department has neither jurisdiction over any part of Texas south of that line, nor is responsible for the crossing of the Rio Grande by Mexican or other Indians anywhere below San Elizario. The commanding general Department of Texas appears to think that this department has jurisdiction and is accountable for whatever happens along the Rio Grande for several hundred miles below El Paso, a misapprehension which it seems has misled him in several instances, and which I request be corrected.

I submit a report from the commanding officer District of New Mexico in relation to the subject-matter of the raids to and from Mexico, made by Indians or others, to which I invite attention. In general, the Indians in New Mexico have been quiet, anything like hostilities being confined to small raids and robberies, but since this report was completed thus far I have received intelligence of the outbreak of about forty Indians from Ojo Caliente. They killed a small guard over public animals and drove off the stock, and since, news, more or less exaggerated, has been received from a settler in Grant County, near the line of Arizona, giving an account of a fight he had with the band, and that his stock was driven off, and ten persons killed. The whole garrison of Fort Bayard, which is near to the scene of difficulty, is out after these Indians, but no official reports are yet received which enable me to state how much, if any, exaggeration there may be (as there always is) in the first reports of such troubles. I expect every moment to get some authentic news. I consider the force at Bayard quite sufficient to deal with this party of Indians, if no larger than officially reported to me. Colonel Edward Hatch, Ninth Cavalry, commanding that district, is a most active and efficient officer, and thoroughly acquainted with the Indians and the situation, and with the troops at his command this affair may be safely left with him. He has been instructed to use all means at his command to hunt down and recapture this band.

The duties of the chiefs of the staff department at these headquarters have been done with efficiency and thoroughness, and they have, as they are entitled to have, the entire confidence of the government. I transmit inclosed a roster of the department, and a field-return of the troops serving in it.

I am, colonel, respectfully, your obedient servant,

JOHN POPE,

Brevet Major-General, U. S. A., Commanding.

Col. W. D. WHIPPLE,

Assistant Adjutant-General,

Military Division of the Missouri, Chicago, Ill.

P. S.—The outbreak of the White River Utes has occurred since this report was written, but as the troops concerned in the fight with them were sent by the Lieutenant-General from the Department of the Platte and from a post of that department nearest to the White River Agency, the details are not known to me. It is not improper to state, however, that under the present Indian system and policy such outbreaks are certain, in the nature of things, to occur from time to time, and are equally sure to increase in frequency and violence as time goes on. I

do not venture to express an opinion as to the causes, though I entertain strong convictions about it. It is very certain that so long as large bodies of Indians, fully armed and equipped for war, are kept at Indian agencies, the temptation to break out from time to time is irresistible, and before such outbreaks can be put down severe losses and great suffering must be expected.

I have always been of the opinion, and have frequently urged it officially, that all reservation Indians should be dismounted and disarmed and then properly fed. In this way only can the horrors of these outbreaks be prevented, and the sooner the fact is recognized the sooner we shall be safe from them. Until it is recognized and acted on we must not be surprised at their frequent recurrence. The small force of the Army is wholly insufficient to garrison these agencies with any force at all sufficient to overawe or control the large bodies of Indians on the reservations mounted and armed as they are, and in each case much time (time fatal to human life and property) is necessarily lost in concentrating out of our meager Army a force large enough to deal with them. As above stated, the only safety under present circumstances and the present policy is to disarm and dismount all reservation Indians at once so that they cannot even be tempted to these outbreaks. The necessary condition to this act is that the Indians be sufficiently fed and that the appropriations for that purpose be not only ample but made regularly and in time for such subsistence to be delivered to the Indians when needed.

	Area. Square miles.	Population.
Kiowa and Comanche	4, 630	2, 976
Connecticut	4, 750	537, 454
Cherokee	7, 861	18, 673
Massachusetts	7, 800	1, 457, 351
Creek	35, 197	57, 674
Choctaw		
Cherokee		
Chickasaw		
Kansas		
Kiowa and Comanche	34, 000	705, 006
South Carolina	33, 809	1, 680, 637
Indiana	35, 000	626, 915
Maine		

SPECIAL REPORT OF COL. EDWARD HATCH.

HEADQUARTERS DISTRICT OF NEW MEXICO,
Santa Fé, N. Mex., September 6, 1879.

SIR: In compliance with your indorsement of August 11, 1879, referring to me, for investigation and report, certain papers from the Department of State, relative to crimes alleged to have been committed in the frontier States of Sonora, Chihuahua, and Tamaulipas by persons either coming from or flying to American territory, I have the honor to report as follows:

I respectfully invite attention to the indorsement of the commanding general Department of Texas, referring to the territory adjacent to the Rio Grande. It is evident there is some misconstruction as to the limits defined for the Department of the Missouri.

Under instructions from Division of the Missouri, the northern limit of the District of New Mexico is designated as described in inclosed copy of letter from division headquarters dated March 1, 1878. From this it

ment of the Missouri has no jurisdiction south of Fort Bliss, and is not responsible for Guadalupe, Quitman, Rice Station, and troops of this command have always relied on the citizens in that region whenever threatened by hostile Indians.

Report it will be also seen that no troops of are stationed directly on the Rio Grande River south of Fort Clark, though scouts are employed, leaving nearly 500 miles of river unprotected. The same instructions are in existence in that part of the District of New Mexico, the Depart-

ment of permanent garrison to the Rio Grande River south of Fort Quitman and 100 miles from Aquila (which is presumed means Eagle) on the Rio Grande. I am informed a company is stationed on the bank of the river, beginning 20 miles from El Norte, has always been a favorite resort

of the Indians. The Springs are a long distance from the settlements near San Ignacio. It is not known whether there are stations directly on the Rio Grande from El Paso to the mouth. What the effect would be in checking the movements of troops stationed upon the river, can only be ascertained by experiment. The troops of this district are not mentioned.

It is attributed to the misconception apparent of the danger of raiding marauding Indians of the frontier that seems accepted that all Indians are from the United States and commit depredations in Mexico. It is not true that the roaming Indians, when hard pressed, are not recognized as belonging to the United States. The Indians made up of the different Apache, Kickapoos, and others, who have never been enemies of all. They roam over a vast territory in Mexico, Texas, Arizona, and New Mexico. The bordering Mexican States make what they can of them, lasting, perhaps, a few years, probably to the detriment of the governments. The peace is construed to mean that the Indians in the mountains of Mexico as long as they do not molest the Mexicans; as to raiding on United States territory, provision that they shall not. These Indians have been driven into Mexico, when raiding in New Mexico (the reports of scouts as follows):

One cavalry, forwarded September 9, 1878.
One cavalry, forwarded December 19, 1878, and one for-

warded June 25 and July 8, 1879, respect-

ally to our government for the acts of these Indians. It is allowed to follow them on Mexican territory. The existence between the forces of the two countries of Indian raids on New Mexican territory is called by our soldiers for the reason that it is in the mountains of Chihuahua. Evi-

dence of the fact exists to-day at Fort Stanton, where a small band of Lipan Indians, five in number, were found on the Mescalero Agency and taken as prisoners to await instructions from the Indian Bureau for their disposition. This is the present condition of the frontier. The only remedy for the Mexican Government is to drive the Indians from their territory. On this side of the line they will be pushed to the extremity of surrendering, when they can be placed upon reservations. The Mexican authorities refer to the hostile Indians being armed with needle-guns by the United States Government. This statement is simply absurd—too preposterous to be thought of for a moment. Our Indian scouts are armed with government arms, and are used to pursue the very Indians accused of marauding. The hostile Indians have no trouble in purchasing arms and ammunition from Mexicans trading with the Indians.

Deserters in our Army, in nearly every case, flee to Mexico with their arms, horses, and equipments, where they are sold by them to Mexicans, and probably find their way into the hands of the Indians. Stolen arms on this side of the line also find their way to the Indians.

Attention is invited to the raid in which Antonio Silva, Rafael Aphela, and others were killed, where it is stated the Indians took refuge in the mountains of Chihuahua. This alone is evidence sufficient that these Indians are a portion of those referred to, for whom the United States Government is not responsible.

The request that a band of Indians once belonging to the White Mountain Indians, who have for some years lived in Mexico, and who were recently pursued into Mexico by our troops, shall be delivered to our officers near the frontier—we consider the Mexican Government responsible for them. When pursued, they take shelter near Janos, Chihuahua.

Referring to the robbers who infest the frontier; there are undoubtedly a great many of the worst characters. The military are powerless, however, to do anything with them. When on United States territory they are under the jurisdiction of the local laws of the States and Territories. A glance at the names will discover that they are nearly all of Mexican descent. It is a matter of indifference to them whom they rob, Mexican or American.

The treaty settles the matter. If the individual claims that he is a citizen of America, he cannot be given up by the United States authorities under the provisions of the extradition laws. This applies to Mexico also.

Probability of our government obtaining a criminal who has fled to any of the frontier Mexican States is slight, should he be of Mexican descent. Not that the Mexican officials are not inclined to do so; it is beyond their control to produce him when the people or his relatives are inclined to shelter and protect him. As evidence, take the mob at San Elizario; very few, if any, have ever been obtained by the Texas authorities on writs of extradition, though there is no reason for supposing the Mexican governors were inclined to turn them over.

If necessary, a volume can be obtained from Texas, New Mexico, and Arizona, from settlers of that State and Territories, of similar statements made by the Mexicans, of raids, murders, and robberies upon American soil. The misfortune is that the Indians and robbers are merely common enemies, who take advantage of treaty-relations of two countries, a sparsely populated frontier, on the Mexican side inadequately protected. Were the United States troops allowed to follow the Indians when in pursuit, or was the Mexican Government strong

enough to prevent the occupancy of their mountain regions by Indians, these bands of Indians would be exterminated.

Very respectfully, your obedient servant,

EDWARD HATCH,
Colonel Ninth Cavalry, Commanding.

The ASSISTANT ADJUTANT-GENERAL,
Department of the Missouri, Fort Leavenworth, Kans.

REPORT OF BRIG. GEN. E. O. C. ORD.

HEADQUARTERS DEPARTMENT OF TEXAS,
San Antonio, Texas, October 1, 1879.

SIR: I have the honor of submitting my annual report, with abstracts and documents, marked A to E, inclusive.

A.—Roster of troops, indicating posts, sub-posts, &c., and their garrisons.

Of the thirteen sub-posts, or camps, eight have been established in the District of the Pecos, by the district commander, under instructions from these headquarters, of April 30, 1878, with a view of making safe the mail-route and settlements in its vicinity, by forcing the Indians from that region and keeping them out of it. The intended result has, practically, been accomplished. All Indians penetrating the country have been so hotly pressed by the troops as to prevent their doing much damage—only three murders, by marauders, during the year. Last year there were seventeen in the region referred to.

B.—Movement of troops.

The good order in Mexico, and the cessation of raids from that country, has enabled a considerable portion of the troops, held in reserve to carry out the order of the President, dated June 1, 1877, to cross the border in pursuit of raiders, to be diverted for use in exploring our own wild country, and occupying the water-holes frequented by raiding bands from our own Indian reservations. Cut off from water, the Indians cannot traverse the country.

C.—Statement of expeditions and scouts, and the distances marched—total 40,100 miles; an increase over that in last report of 18,740 miles. The activity of the troops, in field service, is thus indicated at a glance.

I beg especial attention to reports—copies herewith marked F—from Lieutenant Bullis, Twenty-fourth Infantry, and Lieutenant McMartin, Twenty-fifth Infantry, in the matter of scouts made by them after raiders, on Texas ranches, from the Fort Stanton Reservation. The latter has led to instructions, dated September 9, 1879, from the Department of the Interior, “to use every effort to detect all Indians upon his (the Mescalero—Fort Stanton) reservation that engage in raiding, and recover and restore all property taken by them, and deliver the guilty parties to the proper authorities for punishment.” Those instructions are very good as far as they go; but as military officers, who pursue the Indian raiders, cannot (under the act of Congress promulgated in General Orders No. 71, Headquarters of the Army, Adjutant-General's Office, series of 1878) aid in executing the law, or punishing criminals, they are not the “proper authorities” referred to. Therefore, I venture to suggest that some understanding in the matter be had with the proper civil authorities of Texas.

D.—Abstract of persons killed, wounded, &c., by Indians and Mexi-

ans since October 1, 1878. It exhibits a decrease in number of 34 since the last report, which enumerated 52—a gratifying result.

E.—Report of trials by courts-martial since October 1, 1878; from which it will be seen that the number of cases, for the past year, is materially less than for the preceding period; the number of military convictions, little more than one-half; that theft, and kindred crimes, heretofore frequent among colored troops, have perceptibly diminished; and that the number of desertions has not diminished—this last attributable, perhaps, to the arrival of enlisted men from the North, who do not like the hard work and discomfort of the desert country of West Texas, and, possibly, an intention of certain recruits, when enlisted at the North and elsewhere, to desert on reaching a convenient locality.

EXTRADITION.

By reason of revolutions the Mexican population along the river is of a mongrel character: deserters from the contending forces; Mexican soldiery sent to the border and there disbanded; remnants of bands of wild raiding, or refugee, Indians, who formerly found safety in the deserts and unexplored mountains of Mexico or Texas, and who have gradually learned to trade and mix with the people of its border towns; and smugglers—all go to swell the lawless element. To such a population, ordinary treaties, or modes of administering justice, will not apply, especially when it is considered that under the treaty of extradition now in force the local district judges are commissioners to extradite, and elected by a population more or less liable for extraditable offenses, committed on the opposite side. The conclusion is reasonable that when the existing treaty was made, the character and number of the border refugees was not understood. Moreover, under its provisions neither country is bound to extradite its own citizens, and, generally, to evade the penalties of the treaty, citizenship, to suit their necessities, can be proven by offenders.

The country in the vicinity of the banks of the Rio Grande is peculiar, and as little understood as is the character of the people. Along the lower river, ascending to Camargo, it is a rich valley, thickly timbered on the bottoms, with sheep and cattle ranches inland from the timber. Thence to Laredo it is broken, with small patches of good land. Above Laredo to the mouth of the Pecos it is a cactus belt, with streams few and far between, with little cultivation, except near San Felipe—there only by irrigation. The cactus belt and the plateau are well adapted to sheep-raising. Above the mouth of the Pecos, to the valley of San Elizario and El Paso, where again there are irrigable lands, the river cuts its way through wild and craggy mountain ranges and along the beds of immense cañons. Between the mountain ranges are plains, valleys, and gorges, rapidly undergoing exploration on the Texas side, and found well adapted to grazing. The ranges are much better supplied with water than was supposed, and in proportion as they are explored, valuable discoveries of precious metals result.

From the mouth of the river to El Paso, the population of the border counties is, with few exceptions, Mexican, or of Mexican origin. Americans are pushing west and northwest, and as soon as the new military road—much nearer the river—from Fort Clark to Fort Davis, now under construction by the troops of this department, shall have been opened, quite a number of cattle ranches will be established near and north of the Rio Grande, and along the Pecos. These are the people, with those living in the cities near to and on both sides of the river, for whose benefit a new treaty should be arranged; for their interests, as a rule, are identical in both countries.

PROHIBITORY DUTIES.

on animals and food work as much hardship American citizens, for the reason that droughts of the river the same year. For instance, wheat is dear in Mexico and dear in Texas, and some government horses with corn bought in Mexico generally smuggled across. In 1877 and 1878 drought prevailed in North Coahuila and Chihuahua and horses had to be supplied from this side of the river. Their contractors, too, generally evaded them during the seasons referred to, could not afford to pay enormous prices for their corn on the other side of the river. This year, again, the drought is in Texas, and the price of corn high. Of course a low tariff on wheat and stock, would be the remedy for this state of affairs, and to the benefit of both governments, because it would open up a much larger amount of supplies, which Texas as rich could buy. Now, owing to the small tariff on horses, nearly all the heavy duties, both ways, are paid on horses and herds on one side of the river may starve to death, because they cannot be driven across, without paying duties or undergoing the risk of capture.

RAILROADS.

It is a mistake to convince the leading politicians in Mexico that the United States into that country will not be simply a flood of barbarous and grasping Yankees to rush in and take possession regardless of the rights of present owners of the land. They have an idea that railroad companies are generally government agents; that the roads are a special governmental policy—such as the case of the Texas and Pacific, and that Mexico is a country so much more fertile than the United States, and so thinly peopled in comparison with the United States, and so many hungry Yankees, by thousands, are only waiting for an opportunity to take possession of it. The contrary would prove true if the roads were built extending into Mexico—unless the interests of the laboring classes should become matters of consideration. A mass of poor and underpaid labor would be in the United States. The peons, or operatives, of Mexico are paid less than the Chinese, and all ordinary labor in that country receives less than one-half the wages that similar labor commands in the United States. Cultivated farms are found only where there is water, and there are desert stretches of frontiers on the waters. In the little valleys, supplied with water, are towns or villages—according to the size of the fertile lands, where the non-progressive population live. To what extent the laboring classes would be benefited by manufactures, were they able to earn the means to purchase, is a question which, in my opinion, should be considered before we expend large sums upon railroads.

There are lands in certain districts—like the valley around El Paso, Texas, which are occupied now by the toiling native population, and by numbers of Americans, who went to the

country to settle and have returned, is that there is no room there for American farmers.

MINES.

The extent and productiveness of the mines in Mexico, and the inducements, or encouragement, afforded American miners and mechanics to invest their time and money in mining enterprises in that country, are also questions which, in my view, should be thoroughly understood before citizens of the United States venture into such a country, beyond the protection of our own laws, to seek their fortunes. As I have remarked above, all ordinary labor is very cheap in Mexico; their miners will work for a few dollars per month; their mines are such as require capital to work them; the mining laws are peculiar, and their administration intrusted to local authorities not partial to Americans; and, in addition, taxes—export duties and assessments—are laid upon ores or bullion, with little regard to the interest of mining enterprises, or the future development of the country.

CROSSING THE BORDER.

I respectfully invite attention to the earnest and successful efforts of the Mexican authorities—especially those of Generals Trevino and Canales—to suppress raiding from their side of the river: the condition of affairs which rendered necessary the order, of June 1, 1877, to cross the border, in my opinion, no longer exists, as the Mexican Government has shown its ability and determination to put a stop to such invasions of the United States.

The President having, in his annual message of last December, referred to his desire, as soon as practicable with due regard to the protection of the lives and property of our own citizens, to recognize this ability on the part of the Mexican Government, is my reason for here referring to the subject, and therefore I recommend such recognition. If such action should be had, I am of the further opinion that the discretionary authority, similar to that exercised by the department commander previous to the issue of the order, will suffice, provided the Mexican Government will continue the same force along their frontier that has been found necessary to effectively restrain lawless bands from raiding into our territory.

ADDITIONAL QUARTERS.

In 1877, six companies of cavalry and four of artillery were ordered to this department, three companies of cavalry left the department, and thus the strength of my command was increased by seven companies. Moreover, the garrisons of Forts Quitman, Bliss, and Richardson, and one company from Fort Griffin, have been called in, so that, allowing for quarters since erected for two companies, I have eleven additional companies to quarter, and no fit place for that purpose. I need not say that it is very disheartening to the officers to be compelled, through the cold winters and hot summers of West Texas, to keep their wives and children in tents, shanties, or brush huts, or to have them packed in attics. The want of quarters for so many necessarily crowds all the others, and a glance at the amount of service—40,100 miles of scouts and expeditions, 18,740 miles more than last year—performed by the troops, in a country like West Texas, ought to secure to them some comfort, after a return from their long and dreary marches over trackless wastes.

such discomfort, even under rather favorable circumstances, of eleven officers who reached the department with only four remain, and only one of them has him.

It is consistent with propriety, urged the necessity of two hundred thousand dollars for four additional companies to replace those which have been vacated and to vacate as rapidly the larger settlements as the protection of new settlements may require. These would provide quarters for the eleven companies.

Respectfully, your obedient servant,

E. O. C. ORD,
Brigadier-General, Commanding.

Brigadier-General,
*Adjutant-General,
Military Division of the Missouri, Chicago, Ill.*

REPORT OF MAJ. GEN. W. S. HANCOCK.

HEADQUARTERS MILITARY DIVISION OF THE ATLANTIC,
GOVERNOR'S ISLAND, NEW YORK HARBOR,
October 22, 1879.

In obedience to the instructions contained in your letter of the

there will be ample quarters, when the new buildings authorized to be constructed there during the present fiscal year have been completed. This transfer of regiments was effected pursuant to General Orders, No. 38, Headquarters of the Army, of March 31, 1879.

Under instructions from the General of the Army, dated July 26, 1879, and Special Orders, No. 34, from these headquarters, of July 29, 1879, Fort Wood and the public buildings on Bedloe's Island, New York Harbor (except one building retained for the use of the ordnance sergeant) were transferred to the Treasury Department for use by it as a marine hospital for the port of New York, subject, however, to recall at any time when the military necessities may require, and subject, also, to the operation of the joint resolution of Congress, approved March 3, 1879, designating Bedloe's Island as a site for the colossal statue of Liberty. So soon as this transfer was effected, the small artillery detachment at the post was withdrawn, and the only army official now there is an ordnance sergeant.

Under instructions from the General of the Army, of August 22 and 30, the post of Carlisle Barracks, Pa., has recently been transferred to the custody and control of the Interior Department, to be used as a school for the education of Indian children, reserving, however, the right of the War Department to resume possession of the post whenever needed for military purposes, or when required by Congressional action. The War Department having, in addition to the public buildings, directed certain property at Carlisle Barracks pertaining to its staff departments to be transferred to the Interior Department at a proper valuation, a board of officers is now in session to appraise the value of such property.

In the Department of the South, the Eighteenth Infantry, nine companies stationed at Atlanta, Ga., and one at Chattanooga, Tenn., was transferred to the Department of Dakota in the month of April, 1879, but was not replaced in this command by another regiment. Under instructions, however, from the General of the Army, the posts of Oglethorpe Barracks, Savannah, Ga., and Charleston, S. C., were discontinued as garrisoned posts, and their garrisons (headquarters, Light Battery F and Batteries E and I, Fifth Artillery, at Charleston, and Battery D, Fifth Artillery, at Savannah) were transferred to McPherson Barracks, Atlanta, formerly garrisoned by the Eighteenth Infantry, where they now remain. The military post of Chattanooga has not been regarrisoned, but is now in charge of the superintendent of the national cemetery at that place.

On the 1st of May, Company F, Thirteenth Infantry, was transferred from Baton Rouge Barracks, La., to Newport Barracks, Ky., and on the 6th of June the post of Baton Rouge was discontinued, and the two companies of the Thirteenth Infantry then stationed there were transferred, Company K to Little Rock Barracks, Ark., and Company B to Mount Vernon Barracks, Ala. Under instructions from the Secretary of War, a company of infantry has been stationed for some time at Hot Springs, Ark., pursuant to a request made by the superintendent of the reservation there and the United States commissioners, who had cause to apprehend interference with the performance of their duties; the report of the department commander, herewith, gives full particulars of this matter.

In view of the probable reappearance of yellow-fever epidemic in the South, timely steps were taken this year to so locate the troops as to prevent, as far as practicable, danger to them from that scourge. On the 16th of June, the headquarters, and Companies A, D, H and I,

es to State penitentiaries. While it is no doubt eminently proper to send hardened offenders to these penitentiaries, yet, in cases of first offenses, and where there are evidences that, under judicious treatment, reformation might be effected, I think it would be better to send such young offenders to an institution such as that referred to by the judge-advocate, viz, the State reformatory institution at Elmira, N. Y. For soldiers convicted of purely military offenses, of course, the military prison at Fort Leavenworth, Kan., is a proper place of confinement.

The report of the judge-advocate contains, in addition, some excellent suggestions as to the jurisdiction of the United States over its military posts in New York Harbor, and their docks, wharves, &c., and in reference to a much-needed sea-wall around Governor's Island, and it is hoped that the honorable Secretary of War will renew to Congress his commendation for this sea-wall; but the limits of this report will not permit more than this casual reference to the subject.

The reports of the chief quartermaster, medical director, chief paymaster, and chief commissary of subsistence indicate a satisfactory condition of affairs in their departments.

I inclose, also, a report by Capt. H. G. Litchfield, Second Artillery, who has been on special duty at the headquarters Department of the East since November, 1878, in connection with rifle practice. The great improvement in this practice by the Regular Army during the past year is now a matter of public knowledge, and it is, therefore, needless for me to enter upon it in this report, more especially as on the 10th instant I forwarded, for the information of the General of the Army, all reports of the shooting of the several "Army teams," assembled at Reedmoor, L. I., to participate in the international military match, shot there on the 18th of September last. Although the teams of the Regular Army were unsuccessful in that match, yet they gave ample evidence of their skill and persistent practice, not only in it, but in others in which they took part and were successful. If the great encouragement in this direction shall be continued, highly beneficial results will surely follow.

The discipline and general condition of the troops in this command, as reported to me, are satisfactory and commendable. The diminished strength of artillery companies at many of the sea-coast forts is a serious interference to artillery practice and instruction, especially with heavy guns.

The General of the Army having expressed an opinion that there should be at each garrisoned fort at least two companies of troops, steps looking to that end have already been taken, but the deficiency of quarters at many of the posts has delayed the earlier fulfillment of that intention. Orders have already been issued withdrawing the company of the First Artillery from Fort Independence and sending it to Fort Warren, Mass., where there is already one company of that regiment. Estimates for such additional buildings and repairs as may be required at those posts to be so garrisoned are now being prepared, and a proper opportunity is only awaited to carry the programme decided upon into execution. When this has been accomplished, there will be but little reason on the part of post commanders for not requiring a frequent drill and instruction of the troops, as is contemplated by existing orders and regulations. The inspectors-general do not make a favorable report in regard to such drill and instruction, but I am induced to believe that much of this backwardness is due to the very small companies and few of them, in many instances only one, at some of the posts. I am satisfied, however, that at some posts having more than one company the

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olient servant.

'D. S. HANCOCK,
Major-General, Commanding.
Y,
n, D. C.

M. SCHOFIELD.

OF WEST POINT,
MILITARY ACADEMY,
nt, N. Y., October 18, 1879.

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ate course of studies to the young officers who are detailed as instructors at West Point, and to those who enjoy the benefits of the Artillery School at Fort Monroe, as well as to those of the engineers and ordnance. It is greatly to be desired that a similar school for the infantry and cavalry may be established at no distant time.

ADMISSION OF CADETS.

As the standard of general education throughout the country has gradually advanced, the qualifications of candidates for admission to the Military Academy have naturally shown corresponding improvement. On the other hand, the rigid examination for admission to the Academy have doubtless had their due weight in stimulating to a more thorough method of instruction in the public schools where the young men are generally prepared for admission to the Academy. The influence thus exerted, though perhaps not very great, is felt in all parts of the country, and hence is generally beneficial. At the same time, the rule established by law as a general one, and now made nearly universal by the recent practice of the War Department, of making cadet appointments a year in advance of the time for admission to the Academy, gives to every appointee of fair ability sufficient time to make the necessary preparation. The doors of the Academy are thus left as wide open to young men of talent as they were when the standard of admission was much lower. It is respectfully recommended that this practice be continued.

The standard of admission to the Military Academy must, doubtless, continue to be practically determined by the general state of education in all parts of the country. It has risen to its present level with the growth of general education, and it cannot be arbitrarily forced beyond the level which the general education of the youth of the country may at any time determine. It must be kept at a point which will permit the least favored sections of the country to send young men to the Academy duly qualified for admission. The present equitable apportionment of cadetships among all the States and Territories in proportion to population is so just and so important a feature of the present system that it cannot be sacrificed for the purpose of securing a higher standard of admission to the Academy. Yet, while the minimum standard of admission to the Academy cannot be materially changed, if there are any among the candidates who possess much higher qualifications than this standard requires, there seems no sufficient reason why they may not be given the full benefits of their superior attainments by being admitted to a higher class in the Academy. It does not seem necessary that either they or the government be subjected to the expense and loss of time involved in their going over again a course of studies with which they are already familiar. Young men of the age, intelligence, and habits of industry implied by the possession of such higher qualifications would find no difficulty in the course of practical military instruction, though they were given only three years for the course to which four years are allotted for younger men, with less preparatory training. It might be that few or none of the candidates would at first prove to be duly qualified to enter the third class, yet it might reasonably be expected that the opportunity to take this advanced standing at the start would lead to the necessary preparation therefor by some proportion of the candidates who have favorable opportunities for early education. It would seem but just that such higher attainments should be duly recognized in admissions to the Academy, no less than in graduation.

My present purpose is simply to suggest this as a subject worthy of mature consideration in connection with the general question of increasing to the greatest practicable extent the usefulness of the Military Academy to the entire country.

SELECTION OF CANDIDATES:

The method adopted by some members of Congress, which seems to be becoming more general every year, of selecting their nominees by competitive examination among the young men of their respective districts, has resulted in a marked improvement in the average qualifications of candidates. In this respect this method of selection is highly beneficial. It is, however, liable to one source of injury, against which it is important to guard, especially since the method of selection seems likely to become very general, if not universal. While the member of Congress is relieved by this means from the very difficult task of selecting a candidate who shall certainly possess the requisite mental and physical qualifications, his responsibility still remains for the moral character of his nominee. Good character and manly deportment are certainly no less important than scholarship and physical health. Bad habits contracted by a young man already twenty or twenty-one years of age are not easily corrected, and they are more likely than any lack of mental ability to bring mortification and disappointment to those who are most interested in his honorable career. If manly character, physical perfection, mental ability, and scholarship can all be given their due weight in the competition for appointments, then only unmixed good may be expected to result from this method of selection. My desire is to simply invite the attention of the honorable Representatives in Congress to this subject, which might otherwise escape the attention of some of them in making selections by competition, as it could not do where the selections were made from their own personal knowledge of the applicants.

EDUCATION OF OFFICERS FOR THE MILITIA OF THE UNITED STATES.

I beg leave to suggest, for the consideration of Congress, that the great facilities now afforded by the Military Academy might, with comparatively small additional cost, be made available for the education of a considerable number of young men in excess of the annual vacancies in the Army, to be returned to their respective States for service in the organized militia. It is believed that the States could not fail to derive great benefit from the service in their militia of a corps of officers thus educated, while the Military Academy and Regular Army of the United States would thus be brought into more intimate relations with the great body of citizen soldiers who must compose the armies of the country in time of war. These young men would not necessarily pass through the higher course of studies necessary to qualify them for the engineers or ordnance, but could graduate at the end of two or three years qualified to command infantry, cavalry, or field artillery. From the whole number of young men thus educated might be selected those best qualified to receive the higher education required for service in the scientific corps of the Army.

The machinery of a complete military academy is too expensive to be maintained separately by each of the States. Why not let all derive some direct benefit, at slight expense, from the one national military school?

MATERIAL IMPROVEMENTS.

The material improvements authorized under appropriations made by the last Congress are rapidly progressing.

The new system of sewerage was completed early last spring, and is believed to be as nearly perfect as possible. It has already been attended by a very marked sanitary improvement, amounting, among the enlisted men and their families, to a decrease of 60 per centum in the average number of cases of sickness.

The new water-works are already far advanced, and will be completed before the commencement of the next dry season. Hereafter, the supply of pure water will be abundant at all seasons of the year.

The walls and roof of the main building, and one wing of the new cadets' hospital, will be finished this season. This work will about exhaust the present appropriation. An estimate has been submitted of the money necessary to complete the work now so far advanced, viz, that upon the main building and one wing. It is recommended that this sum be appropriated and that the work be finished without further delay, leaving the question of building the other wing of the hospital to be decided after other improvements of more pressing necessity have been made.

The most pressing need of the Academy at this time is an addition to the cadets' barracks. Next in importance is new barracks for the cavalry detachment; and, third, some additional quarters for officers. Explanations of these several necessities have been made in my letter accompanying the annual estimates.

I respectfully invite the attention of the War Department and of Congress to this important subject, in which is involved the health and simple comfort of the cadets, the soldiers, and the young officers.

CONCLUSION.

In concluding this report, I take pleasure in expressing my high appreciation of the faithful and efficient manner in which the officers of the Academy have performed their important duties.

I am, General, very respectfully, your obedient servant,

J. M. SCHOFIELD,

Major-General, U. S. A.,

Superintendent Military Academy, Commanding.

The ADJUTANT GENERAL U. S. A.,
Washington, D. C.

REPORT OF THE JUDGE-ADVOCATE-GENERAL

WAR DEPARTMENT,
BUREAU OF MILITARY JUSTICE,
October 8, 1879.

SIR: In compliance with circular of the 6th ultimo, I have the honor to furnish the following report of the business of this Bureau for the year between October 1, 1878, and October 1, 1879:

Number of general court-martial records received, reviewed, and registered. . .	1,673
Number of reports made and opinions furnished upon court-martial proceedings, applications for remission of sentence, &c., and upon the miscellaneous questions of law referred to the Judge-Advocate-General for opinion by the Secretary of War	898
Number of official applications from the War and Treasury Departments for abstracts of proceedings of trials, &c., answered	1,087
Copies of records furnished under the 114th Article of War, &c., pages	10,553

The following schedule, which is similar to the one presented in my last annual report, exhibits the number of convictions in the Army of the offenses indicated, as shown by the records of general courts-martial received at the Bureau during the past year:

For absence without leave.....	289
For advising soldier to desert.....	1
For allowing prisoner to escape.....	6
For assault and battery.....	72
For assault with intent to kill.....	10
For breach of arrest.....	8
For desertion.....	378
For disobedience of orders.....	100
For disrespect to superior officer.....	29
For drunkenness.....	138
For drunkenness on duty.....	201
For embezzlement, &c.....	10
For failure to attend drill, roll-call, &c.....	81
For larceny.....	117
For mutiny and mutinous conduct.....	8
For neglect of duty.....	49
For presenting fraudulent claim.....	2
For offering violence to superior officer.....	9
For quitting guard or post as sentinel.....	107
For quitting platoon or division without leave.....	7
For selling, losing, or wasting government property.....	96
For sleeping on post.....	64
For "conduct unbecoming an officer and a gentleman" (not included under previous heads).....	10
For disorders, &c., charged as "conduct prejudicial to good order and military discipline" (not included under previous heads).....	462
For miscellaneous (not included under any previous head).....	41

By comparing this list with that contained in my last year's report, it will be perceived that the cases of convictions of desertion are increased by twenty-four. My examinations of the records of trials induce the belief that the principal or most conspicuous causes of desertion in the Army are: 1, drunkenness, or rather indulgence in intoxicating liquors; 2, oppressive or injudicious treatment of soldiers by non-commissioned officers, and especially first sergeants, of companies, invested with an excess of authority. If, on the one hand, no enlistments were made except of men known to be of confirmed habits of sobriety and assured moral character, and, on the other hand, the wants and interests of soldiers were uniformly investigated and attended to by their company officers *in person*, the men being authorized and encouraged to have recourse *directly* to their officers whenever aggrieved or needing advice, and the non-commissioned officers precluded from exercising any form of arbitrary power over their inferiors, the number of desertions in the Army would, I am confident, be very considerably diminished. And in this connection I would express my concurrence in the views of Major-General McDowell on the subject of the causes and cures of desertion, set forth in General Order No. 3, issued from the headquarters of his Division, dated June 23 last.

I take pleasure in bearing testimony to the constant and valuable work accomplished by my Assistants, as well as by the clerks and other persons employed at the Bureau, during the year.

The officers of the corps of Judge-Advocates not on duty at the Bureau have performed their varied and important duties with their usual efficiency, so far as is known to me. Reports of judge-advocates (and acting judge-advocates) of military departments, so far as received, are herewith inclosed for such reference as may be desired, and as illustrating the character of the services required of these officers. It is much to be regretted that this class of officers cannot be furnished in all cases

with suitable libraries of legal works of reference, to be kept at the department headquarters. Frequently called upon as they are, in the course of their duties, to examine the statute law and rulings of the courts of the States and Territories included in their departments, to advise upon questions of law arising in the administration of the department commands, to prepare military charges and conduct military prosecutions, as well as occasionally to assist in the preparation of cases for trial or in the defenses to be made by officers sued or prosecuted in the civil tribunals, these Judge-Advocates should, it is deemed manifest, be furnished with a selection of legal treatises, reports, and statutes for reference and study; and to deny or unreasonably restrict them in this respect, is both unjust to themselves as skilled and faithful officials and prejudicial to the interests of the military service. Such a course may also induce an unnecessary public expense in the retaining and paying of lawyers in cases where the services required might be as well performed by the judge-advocates were they supplied with the necessary tools of their profession. In view of these considerations, applications for an appropriation for the purchase of law libraries for department headquarters have been repeatedly made by me and approved by the Secretary of War, but have not been favored by Congress. The very small contingent fund at present allowed to the Bureau, \$250, even if legally applicable, would not be sufficient for this purpose; indeed, the same does not suffice to provide the Bureau with the proper books for its own use, since from this fund it must also supply itself with the stationery and furniture, and meet the various incidental expenses, required for the office in Washington. Permit me to ask that the advisableness of supplying the headquarters of military departments with the libraries indicated may be brought to the consideration of Congress.

In connection with this report I desire again to call the attention of the Secretary of War to the amendment of the one hundred and third article of war, which has heretofore passed the Senate, but has failed to go through the House of Representatives (though favorably reported by its Military Committee), and the adoption of which, as settling a protracted controversy, is, in my judgment, imperatively called for.

The amended article, as accepted and passed by the Senate, is as follows:

A BILL to amend the one hundred and third article of war.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the one hundred and third of the rules and articles of war be, and the same hereby is, amended so as to read as follows:

ARTICLE 103. No person shall be tried or punished by a court-martial for any offense committed more than two years, or in a case of desertion three years, before the arraignment of such person for such offense, unless he may meanwhile have absented himself from the United States, in which case the time of his absence shall be excluded in computing the period of the limitation.

I scarcely need again remind the Honorable Secretary of the singular anomaly dwelt upon by me in former reports, that while the prosecution of all other military crimes is admitted to be limited by the existing article to the period of two years therein prescribed, the crime of desertion has been heretofore held and treated by the majority of commanders in the Army to be practically unaffected by the limitation, so that a deserter may be brought to trial at any time after his offense, or, in other words, remain liable to arrest and punishment to the end of his life. Thus, under this doctrine and practice, a soldier of the war of 1812, who may have deserted and be still alive, may at any moment be apprehended, tried by court-martial, and sentenced to a term of imprisonment, though by an exemplary and valuable life of more than half a century he may have

atoned over and over for the dereliction of his youth. In other words, he remains under a liability from which a soldier guilty of mutiny or cowardice in battle, or a civilian guilty of manslaughter, robbery, rape, arson, or high treason, is exempt under the existing law of the land. "Statutes of limitation," as observed by the United States Supreme Court, "rest upon sound policy, and tend to the peace and welfare of society." Wharton remarks of them that they are "acts of amnesty and grace, to be liberally construed in favor of the defendant," and at the same time "checks imposed by the State itself to exact vigilant activity upon its subalterns." They are indeed found in all modern codes as the expression not merely of an enlightened humanity but of sound sense and practical policy; and for our *military* laws to exclude from their application any particular class of offenders against military discipline would seem to be unworthy the dignity of the government, as well as prejudicial to the interests of the military service in inducing a lack of promptness and energy in the arrest and punishment of guilty persons. It is well known to the Secretary of War that it has always been held by the Judge-Advocate-General, (my predecessor in office, as well as myself,) that the existing military statute of limitations—the article of war above mentioned—is a *general* statute applying to desertion in the same manner and to the same extent as to all other military offenses, and that the same conclusion has been held and expressed by the honorable Attorney-General in three successive official opinions, and indeed publicly approved and adopted by the Secretary of War in a General Order (No. 65) issued from the War Department in 1874. I do not propose, however, to contest here the opposite doctrine above referred to, but, in view of the fact that the same has been repeatedly pronounced against by the highest legal adviser of the government, and of the fact that, while the construction of the Article remains thus in conflict, the due administration of military law must be constantly embarrassed, and injustice and oppression be not unfrequently wrought in individual cases, I desire simply to urge that the grave existing complication and difficulty be fully and finally removed by legislation such as that already initiated. In his annual report of November 19, 1877, the present Secretary of War approved such legislation and recommended its adoption by Congress. It is earnestly desired that this recommendation may be repeated. At present, indeed, when parties are brought to trial for desertions committed many years before, and sentenced, the President, upon the recommendation of the Judge-Advocate-General, in the majority of cases intervenes, through the Secretary of War, and, by the exercise of the pardoning power, sets free the prisoner. But this fact, which forcibly illustrates the injustice and impolicy of such trials, shows also that the existing law or practice is most faulty in permitting the same to be had at all.

I desire further to reiterate here my conviction that the adoption of an article of war making *gambling* a punishable offense in the Army, as it has long been in the Navy, would subserve the best interests of the military service. A bill, framed for the purpose, was agreed upon and reported by the Senate Committee on Military Affairs in April, 1878, but was not finally acted upon. This bill is clear and comprehensive in its terms, and, if passed and duly executed, would, it is believed, effectually suppress a practice which, while it demoralizes the service wherever permitted and gravely prejudices its good order and discipline, puts in jeopardy the means of support of families, and is thus an unqualified public evil.

I would lastly ask the attention of the Secretary of War to two defects in the existing articles of war, which, though heretofore brought to

the consideration of Congress, remain as yet without correction. One of these is the employment in Article 72 of the word "general" before "officers," in prescribing by what officers the superior courts-martial may be convened. By the use of this word the article incapacitates any officer below the rank of general—a colonel, for example—who is in command of a military department, from ordering such a court. It is my opinion that *all* department commanders, of whatever rank, should be invested with the same authority in this particular, and accordingly that the word "general" in the first line of the article should be struck out by legislation. The provision, as it now stands, has in several instances caused very considerable embarrassment in the administration of military justice. The other defect had in view is in the framing of the present one hundred and fourth article, which in terms precludes the execution of a sentence of court-martial except where the "whole proceedings" of the same have been approved by the reviewing officer. This term has been construed in practice to mean the material proceedings, *i. e.*, the proceedings material to the legal validity of the sentence or punishment approved. The Article, however, as worded, is likely to mislead, and should properly be modified. A bill amending it was, indeed, reported by the Senate Military Committee in 1878, but no further action appears to have been taken.

Respectfully submitted.

W. M. DUNN,
Judge-Advocate-General.

Hon. GEO. W. McCRARY,
Secretary of War.

REPORT OF THE QUARTERMASTER-GENERAL.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
October 10, 1879.

SIR: I have the honor to submit the annual report of operations of the Quartermaster's Department during the fiscal year ending 30th June, 1879.

The balance on the 1st of July, 1878, in the Treasury to the credit of the Quartermaster's Department was, as by last report.....	\$1,529,095 92
The appropriations made for the service of the Quartermaster's Department during the fiscal year were, in gross.....	11,263,388 16
Deficiencies for 1878 and prior years.....	16,352 76
Amounts deposited to credit of appropriations and received from sales to officers of public property....	701,427 42
Total.....	\$13,510,264 26
Remittances to disbursing officers have amounted to..	\$11,214,162 51
Requisitions to pay settlements made by the Treasury.	858,067 70
Amount drawn by Commissary-General of Subsistence.	12,135 50
War transfer warrant under act 3d March, 1875.....	7,189 16
Carried to surplus fund, act 30th June, 1874.....	198,108 26
Total.....	12,290,563 13
Balance in Treasury undrawn at end of 30th June, 1879.....	1,219,701 13

A table accompanying this report gives the amount of the various items of appropriations, remittances, &c., in detail.

TRANSPORTATION.

The movement during the year was of 59,177 persons, 4,921 beasts, and 120,440 tons of material, the cost of which is, as reported, \$2,215,968.05.

The larger movements of troops were:

First Cavalry, Company D, from Department of California to Department of Columbia, 1,005 miles.

Fourth Artillery, Companies A and D, from Department of Columbia to Department of California, 788 miles.

Eighth Infantry, Companies A, B, C, D, E, G, I, and K, from Department of Arizona to Department of California, 1,234 miles.

Tenth Infantry, headquarters and ten companies from Department of Texas to Department of the East, 1,935 miles.

Twelfth Infantry, Companies B, C, D, E, F, G, H, I, and K, from Department of California to Department of Arizona, 1,268 miles.

Eighteenth Infantry, headquarters and ten companies from Department of South to Department of Dakota, 2,424 miles.

Twenty-second Infantry, headquarters and ten companies from Department of the East to the Department of Missouri and Texas, 1,629 miles.

RAILROAD TRANSPORTATION.

Twenty-nine thousand seven hundred and ten persons, 3,758 beasts, and 57,866 tons of material were moved by railroad the cost of which service, excluding that over the bonded Pacific and land-grant railroads, was, as reported, \$601,436.53.

Under existing laws payments are not made out of appropriations of the Quartermaster's Department for military transportation over the bonded Pacific and land-grant railroads; the estimated value of that service for the fiscal year is: For transportation over the Pacific railroads, \$700,000; for transportation over the land-grant railroads, \$150,000; indicating that the aggregate value of all military transportation by rail during the year was \$1,451,436.53.

The railroad business of the Army is conducted according to the same rules, with the same general forms of requests, receipts, and accounts referred to in my report of last year. A general order (44 of 1879) was issued detailing the method of marking boxes, packages, &c., for shipment so that there shall be less difficulty hereafter in tracing any article lost *in transitu* and less danger of confusion in shipments.

The refusal of a number of land-grant railroads and their immediate connections to provide through tickets at through rates for the Quartermaster's Department because payments for military transportation over land-grant railroads are prohibited by law, notwithstanding that the principle has been established by the Supreme Court that they are entitled to some compensation for such service, has embarrassed the department and in some cases necessitated payments at high local rates for transportation which the citizen, not in military service, secures at lower through rates.

The difficulties have been partially overcome by correspondence with the railroads of the country, but cannot be finally settled until Congress authorizes some compensation to land-grant railroads for services performed for the department.

My views on the subject are fully set forth in Senate Ex. Doc. No. 28, Forty-fifth Congress, parts 1 and 2—copies herewith.

The sundry civil appropriation law of March 3, 1879, appropriated

appropriations, originally applicable, had been expended for other legitimate transportation bills.

Unsettled accounts of these roads, amounting to \$483,972.54, which have been presented by the railroads are now under adjustment, and in course of settlement under the same provisions of law.

The following statement indicates the total allowances for military transportation over these roads from the date they were first opened for traffic up to June 30, 1879:

Names of companies.	Amount paid in cash.	Amount credited on bonds under act of July 2, 1864.	Amount withheld under act of March 3, 1873, Rev. Stat. 5260, and act of May 7, 1878.	Total.
Union Pacific	\$1, 000, 034 44	\$1, 000, 034 02	\$2, 230, 201 57	\$4, 610, 270 03
Central Pacific	223, 517 45	223, 517 43	503, 108 33	950, 143 21
Kansas Pacific	880, 341 07	880, 341 08	625, 684 34	2, 386, 366 49
Sioux City and Pacific	4, 403 80	4, 403 90	20, 681 23	29, 489 12
Total	2, 798, 296 85	2, 798, 297 03	4, 281, 705 57	9, 878, 299 45

The following statement exhibits the military transportation services of the Pacific railroads during the fiscal year ending June 30, 1879:

Names of companies.	Number of persons transported.	Number of animals transported.	Pounds of freight transported.
Union Pacific	6, 556	1, 089	44, 370, 129
Central Pacific	2, 688	112	2, 805, 734
Kansas Pacific	1, 681	559	4, 487, 419
Sioux City and Pacific	161	28	383, 309
Total	10, 486	1, 788	52, 147, 582

The value of this service, at tariff rates, was (approximately, all the accounts not yet being rendered):

On the Union Pacific	\$463, 943 40
On the Central Pacific	155, 000 00
On the Kansas Pacific	3, 000 00
Total	721, 943 40

At the close of the fiscal year there remained in this office and at the Treasury unsettled accounts of the Pacific railroads to the amount of \$325,364.13 in this office, and \$158,608.41 in the Treasury; a total of \$483,972.54.

The total value of the military transportation over these roads to 30th June, 1879, is \$10,362,331.99.

WAGON AND STAGE TRANSPORTATION.

There were 31 contracts for wagon transportation during the year; 32,539 tons of supplies were moved by wagon teams at a cost of \$858,142.56, and 3,285 passengers by stage at a cost of \$76,747.12.

WATER TRANSPORTATION.

During the year 26,182 passengers, 1,163 beasts, and 60,022,000 pounds of stores were carried by vessel, the cost of which service was, as reported, \$679,641.84.

railroads, and 50 per centum of the amount, \$14,445.94, allowed by the accounting officers of the Treasury Department. This amount has not been credited on the indebtedness of the company, as no award for it has been received at this office. Other accounts of the company remain unsettled for want of an appropriation to pay them.

In postal earnings there are due—

The McMinnville and Manchester Railroad.....	\$5,054 37
The Nashville and Northwestern Railroad.....	55,581 92
Total	60,636 29

These sums are due for services in conveying the mails prior to July 1, 1876, and are payable to the Quartermaster's Department, to be credited when paid upon the debts incurred by those two roads.

The amount due the Nashville and Northwestern Railroad has been regularly assigned by the company to the Quartermaster's Department, and only awaits an appropriation for its payment. I recommend that special effort be made at the next session of Congress to secure the necessary appropriation to pay the amount, or the passage of a law which will authorize the Postmaster-General to adjust and settle the account of the railroad for services in carrying the mails prior to July 1, 1876, and to draw his warrant on the Treasurer of the United States for whatever sum he may find to be due for the service, as was done in the act of March 3, 1879, authorizing the Secretary of War to reopen and adjust the settlement made with the Western and Atlantic Railroad of Georgia for property purchased by that road.

The amount due the United States payable from the unpaid postal earnings of the McMinnville and Manchester Railroad (\$5,054.37) cannot be paid and credited on the indebtedness of that road, for want of an appropriation by Congress. I recommend that the necessary appropriation be asked for.

Efforts have been made for a number of years by most if not all the railroad companies that purchased property of the United States at the close of the war, and that have paid in full the debts incurred for it, to secure the passage of a law directing the Secretary of War to reopen and readjust the settlements that have been made with those companies on the basis of settlements made with certain Tennessee railroads, against which suits have been brought under the act of March 3, 1871, and to refund a portion of the money received by the United States from the companies in payment of their debt.

The amount which would be taken out of the Treasury and paid to the railroad companies, if the efforts of the companies should succeed, is estimated to be about \$1,043,000, or 33½ per cent. of the whole amount received from those companies, and it might exceed \$1,148,000.

I have already stated my views fully in relation to the propriety of granting the relief, so called, asked for by the companies, in my communications to the Secretary of War of April 26, 1876, and January 24, 1879, which will be found in Senate Ex. Doc. No. 57, Forty-fourth Congress, first session, and the Congressional Record for February 9, 1879, and I need here only invite attention to them.

A tabular statement accompanies this report in which will be found full details of all collections, settlements, compromises, and claims on account of the debts of the indebted railroads, and of the balance still due and unsettled.

CAVALRY AND ARTILLERY HORSES.

During the fiscal year 1,686 horses were purchased for the cavalry and artillery service; they cost \$156,164.98.

iver has been discontinued under the law, which feeds and supports the horse of an officer west of that river, but requires the officer east of it, drawing the same pay, if mounted, to purchase forage out of his pay, his private income, should he be so fortunate as to have any.

Officers submit loyally to the law, but it is difficult for them to persuade themselves that in making this distinction between the two sides of a geographical line they have been treated with that equal liberality and justice which has always heretofore characterized the military legislation of the country.

There was issued to the Army during the year, 628,268 bushels of corn; 952,473 bushels of oats; 180,529 bushels barley; 51,934 bushels of rye; 53,078 tons of hay; 140 tons of fodder, and 2,462 tons of straw.

The issues of fuel were 42,098 cords of hard wood; 71,582 cords of soft wood; 19,391 tons of anthracite coal, and 16,279 tons of bituminous coal.

General Orders No. 113, Headquarters of the Army, 14th December, 1877, published a new scale of equivalents to govern the issue of fuel. Further official experiments on the values of the different fuels of the United States, especially of coals, are desirable, and it is to be hoped that Congress may grant an appropriation for this investigation.

The law which abolished issue of fuel to officers causes great hardship to those who are stationed at military posts in inclement climates, and where fuel is scarce and costly.

It is much to be desired that this allowance be restored. It is even more unjust to those in the wilderness than the abolition of the forage allowance is to those living east of the Mississippi.

CONTRACTS.

Eight hundred and seventy-eight contracts were received at this office for supplies, materials, and for work in the various branches of the military service connected with the Quartermaster's Department.

MILITARY CARRIAGES AND HARNESS.

There were purchased during the year, 281 six-mule, 215 two horse and four horse or mule wagons, 72 spring wagons, 50 ambulance wagons, and 6 miscellaneous wagons, trucks, and drays.

Of these there were purchased under contract, after advertisement, 10 six-mule wagons from Studebaker Brothers, of South Bend, Ind., at \$89.90 each; 25 six-mule wagons from Henry M. Black, of San Francisco, Cal., at \$200 each; 100 two horse and four horse or mule wagons from Wilson, Childs & Co. of Philadelphia, Pa., at \$83 each; 160 two horse and four horse or mule wagons from the Kansas Manufacturing Company of Leavenworth, Kans., at \$84 each; 15 two horse and four horse or mule wagons from Henry M. Black, of San Francisco, Cal., at \$200 each; 40 spring wagons, Dougherty pattern, from Wilson, Childs & Co., of Philadelphia, Pa., at \$165 each; 25 spring wagons, Dougherty pattern, from the Kansas Manufacturing Company of Leavenworth, Kans., at \$149.50 each, and 50 ambulance wagons, Army pattern, from the Kansas Manufacturing Company of Leavenworth, Kans., at \$174.50 each.

Forty-one spring wagons have been furnished to posts and depots during the year.

One hundred and seventy-five sets of six-mule wagons, and 100 sets of four-mule ambulance harness, were purchased under contracts at

\$57.10 per set for six-mule wagons and \$52 per set for four-mule ambulance harness.

TARGETS FOR RIFLE PRACTICE.

Fifteen targets of cast iron have been issued to the Army during the year. On the 16th of August, 1879, under General Orders No. 86, Headquarters of the Army, the duty of providing targets for rifle practice was transferred to the Ordnance Department, and this department ceased to purchase and issue them.

EXPLORING EXPEDITIONS.

Under General Orders No. 62, Headquarters of the Army, 3d July, 1877, this department has continued to give materials and transportation and other aid to the surveying expeditions under Lieut. George M. Wheeler, of the Corps of Engineers.

CLAIMS UNDER ACT OF JULY 4, 1864.

In the report herewith of Maj. J. M. Moore, who, since the 7th November, 1878, when he relieved Maj. R. N. Batchelder, until that time in charge of the claims branch of this office, will be found full details as to the number and cost of agents and clerks engaged in the work of investigating and preparing for settlement the claims for quartermaster's stores taken by the Army and delivered to and used by the Army during the late war in States not in rebellion.

The act of July 4, 1864, made it the duty of the Quartermaster-General to receive and to investigate all such claims, and if convinced of their justice, of the loyalty of the claimant, and that the stores have been actually received or taken for the use of and used by the Army, then to report each case to the Third Auditor, with recommendation for settlement.

The total cost of these examinations during the past year is estimated at \$122,825.52.

The number of claims reported on by agents during the year is 2,460, calling for \$1,915,614.84. The amount recommended for allowance by agents is \$220,534.22.

There were on file on 1st July, 1878, 11,676 claims, and during the year 1,640 new claims were filed, making a total of 13,316, calling for \$6,921,592.50. Of these 635 were favorably acted on by the Quartermaster-General during the year, and 1,032 were rejected.

These 1,667 claims decided by this office called for \$1,398,298.55. The amount reported to the Treasury recommended for allowance was \$121,568.26.

At the close of the fiscal year 1,446 claims were on file prepared for the final action of the Quartermaster-General, but had not been acted on by him for want of time and opportunity. Many of these have since been disposed of.

The total amount of the 3,796 claims which have been disposed of, or which have received preparatory consideration during the year, is \$3,186,658.55; average amount of each claim, \$840.00. The average cost of investigating and preparing these for action of the Quartermaster-General was \$32.00 each. This includes the cost of receiving, recording, and answering a multitude of inquiries from claimants, their friends, and their attorneys or agents.

The last annual report of this office contains a detailed table in regard to these claims which I do not repeat here.

The general summary of the work may be shortly stated as follows:

There have been filed under the act of July 4, 1864, 40,748 claims, for \$30,557,014.99; 9,905 have been reported by the Quartermaster-General with recommendation for allowance, amounting to \$4,143,932.95; the face of these claims was reduced by the sum of \$3,566,792.44; 19,194 claims, calling for \$17,322,995.60, have been rejected as not proved or not meritorious.

MISCELLANEOUS CLAIMS AND ACCOUNTS.

On July 1, 1878, there were on file in this office 12,450 claims, amounting to	\$6,895,072 79
And 328 accounts, amounting to.....	51,127 53

Making in the aggregate 12,778 claims and accounts, amounting to...	6,947,001 32
During the year 2,031 were received, amounting to.....	273,472 93

Total claims and accounts.....	7,220,474 25
--------------------------------	--------------

During the year, 115 claims were examined and approved for \$9,577.04, being \$1,170.70 less than claimed.

One hundred and eighty-one claims were referred to the Third Auditor of the Treasury for action of the accounting officers, amounting to \$25,063.64.

One hundred and sixty-two claims, amounting to \$124,224.08, were referred to other departments to which they properly pertained.

One hundred and twenty, amounting to \$25,264.82, were rejected.

Eight hundred and sixty-three accounts, amounting to \$39,303.88, were approved, being a deduction in the amount as presented of \$1,050.65.

Four hundred and forty-five were referred to other departments, amounting to \$30,965.48.

Nineteen accounts, amounting to \$682.59, were rejected, making a total of 1,905 claims, and accounts, calling for \$257,301.88 disposed of during the year.

There are still on file, unsettled, 12,513 miscellaneous claims and 391 accounts, amounting, as presented, to \$6,963,172.37.

BARRACKS AND QUARTERS.

During the fiscal year the construction of 104 new buildings was authorized, at a total estimated cost of \$227,463. They comprise barracks, officers' quarters, public storehouses, guard-houses, magazines, &c., and are at military posts in California, Kansas, Missouri, Nebraska, Minnesota, Texas, Rhode Island, New York, Connecticut, Virginia, Maryland, Pennsylvania, North Carolina, South Carolina, Florida, Arkansas, and Kentucky, and in the Territories of Arizona, Idaho, Washington, Indian, Wyoming, Dakota, Montana, New Mexico, and District of Columbia.

Repairs of wharves were authorized to the amount of \$18,393.

The expenditures for construction and repairs of buildings have been distributed as follows:

Department of Arizona	\$33,715 00
Department of California	61,820 00
Department of Columbia	54,151 00

Total Division of the Pacific.....	\$139,686 00
------------------------------------	--------------

Department of the Missouri.....	\$71,066 00	
Department of the Platte	15,646 00	
Department of Dakota.....	36,102 00	
Department of Texas	64,422 00	
		<hr/>
Total Division of the Missouri.....		\$186,236 00
Department of the South	37,758 00	
Department of the East	153,712 00	
		<hr/>
Total Division of the Atlantic.....		191,470 00
		<hr/>
Grand total		517,392 00

In addition to these expenditures, the following new posts, &c., have been authorized:

In January and March, 1879, \$4,600 were authorized for sheltering troops on the North Fork of the Canadian River, in the Indian Territory.

In June, 1879, the commanding general Division of the Pacific was authorized to use any spare barracks and quarters money in his division that he might have, to commence a new four-company post at or near Lake Chelan, Northern Washington Territory; \$20,000 have since been allotted towards building it.

SPECIAL BUILDING PROJECTS AUTHORIZED BY CONGRESS.

In Army bill approved June 18, 1878, \$100,000 was appropriated for building a military post near the northern boundary of the Territory of Montana, in the vicinity of the point where the Milk River crosses said boundary from the Dominion of Canada. This is to be a six-company post, and known as Fort Assinaboine.

In same bill Congress appropriated \$100,000 for building a military post near the Black Hills, in either of the Territories of Wyoming or Dakota.

This post has been located on Bear Butte Creek, Dakota. It is to be a ten-company post, and to be known as Fort Meade.

In same bill Congress appropriated \$60,000 for storehouses and offices at Omaha, Nebraska.

In Army bill approved June 23, 1879, \$30,000 was appropriated for construction of storehouse and depot building, provided site is donated to the United States, at Omaha.

In sundry civil bill, approved June 20, 1878, \$13,500 was appropriated for building operations at Fort Leavenworth military prison.

In same bill Congress appropriated "for repair and erection of barracks at Fort Monroe, Va., \$25,000."

In similar bill for present year, an additional appropriation of \$34,000 is made to complete that work.

In sundry civil bill of March 3, 1879, \$40,000 is appropriated for the establishment of a new post in the vicinity of Pagosa Springs, Colorado. This is to be a four-company post, and known as Fort Lewis.

By act approved February 4, 1879, \$40,000 was appropriated for purchase of ground and establishment of a military post at El Paso, Tex. This post is to be known as New Fort Bliss.

In sundry civil bill approved March 3, 1879, \$25,000 was appropriated for rebuilding eight sets of officers' quarters at Madison Barracks, N. Y.

In same bill Congress appropriated \$100,000 for requisite department headquarters buildings at Fort Snelling, Minn.

In Army bill approved June 23, 1879, Congress appropriated \$50,000 for the construction of a military post near the Niobrara River, in Northern Nebraska.

HOSPITALS.

Construction, repairs, and alterations of military hospitals to the amount of \$74,987 were authorized during the year.

SALES OF BUILDINGS.

Four buildings and the remnants of two wharves were ordered to be sold during the year.

PURCHASE OF MILITARY SITES IN TEXAS.

None of the sites of military posts in Texas, for purchase of which the War Department has for years asked Congress to make provision, have been acquired under the conditions of the act of 3d March, 1875.

That act so limited the powers and the appropriation it granted that the War Department has been unable to procure consent of any of the owners of the land in question.

In the mean time they increase their demand for rent upon the expiration of each lease, which, under the laws governing contracts, can be made only for one year at a time.

For particulars on this subject I beg to refer to my last annual report.

No progress has been made, and I apprehend that none will be made until Congress sees fit to trust the War Department with some discretion in the matter of their purchase.

When Congress appropriated \$10,000 to purchase the site of Fort Duncan, the owner demanded \$10,358. The law forbidding the payment of more than 10,000, he leased the land to the United States at a rent of \$2,400 a year and advanced his selling price to \$20,000. Subsequently he increased this price to \$30,000, and refuses to name a price at which he will now sell.

LOSSES BY FIRE.

Twelve fires were reported during the year.

On July 9, 1878, carpenter's shop, &c., destroyed at Fort McPherson, Nebr.

On July 13, 1878, carpenters' shop, &c., destroyed at Fort A. Lincoln, Dak.

On October 27, 1878, three sets officers' quarters destroyed at Fort Whipple, Arizona Territory.

On October 29, 1878, ice-house destroyed at Fort Dodge, Kans.

On November 3, 1878, stables destroyed at Fort Leavenworth, Kans.

On November 6, 1878, two sets of officers' quarters destroyed at Fort Missoula, Montana Territory.

On December 8, 1878, post traders' store, &c., destroyed at Fort McHenry, Md.

On December 14, 1878, one set officers' quarters destroyed at Camp Independence, Cal.

On December 24, 1878, two sets officers' quarters destroyed at Fort Keogh, Mont.

On December 31, 1878, one set officers' quarters destroyed at Fort McHenry, Md.

On January 4, 1879, headquarters offices partially destroyed at Chicago, Ill.

On March 6, 1879, Battery B quarters partially destroyed at Fort McHenry, Md.

SAN ANTONIO DEPOT.

The extension of the second story of the south front of this building, to provide additional office-rooms for the headquarters of the Department of Texas, has been completed, at a cost of \$19,952.

The rooms will be useful, although Congress in effect has now repealed the law compelling headquarters of military departments and divisions to move away from the popular centers of business and intelligence and go to military posts, at no one of which, when the attempt to execute the order was made, were found in existence sufficient quarters for the accommodation of the business and the *personnel* of headquarters.

The expenditure in building thus far incurred or authorized, and to be incurred, on account of the removal of such headquarters, may be estimated as follows:

Alterations in old buildings and erection of new buildings at Governor's Island, New York Harbor.....	\$55,000
Estimated cost of buildings already erected or buildings needed, and for which estimates have been sent in for the new recruiting depot on David's Island, caused by the occupation of the former recruiting depot on Governor's Island as the headquarters Division of the Atlantic and Department of the East	184,000
Same at Fort Snelling, Minn.....	299,000
Same at Omaha, Nebr	148,000
Same at San Antonio, Tex	116,000
Same at Presidio, San Francisco, Cal.....	54,000
	<hr/>
	856,000

MILITARY RESERVATIONS DECLARED.

Four military reservations have been declared, viz: December 18, 1878, Fort Meade, Dakota Territory; January 28, 1879, Fort Lewis, Colo.; April 28, 1879, Camp Sheridan, Nebr.; June 10, 1879, Fort Missoula, Montana Territory.

CLOTHING, CAMP AND GARRISON EQUIPAGE.

The expenditure on account of clothing and equipage of the Army during the fiscal year was	\$862,620 71
The balance in the Treasury undrawn 30th June, 1879, was.....	127,676 67
	<hr/>
Total	990,297 38
Of this sum the annual appropriation for the fiscal year was	900,000 00
	<hr/>
Credits from sales to officers and of issues to soldiers in excess of the allowance	90 297 38

The greater part of the \$127,676.67 remaining in the Treasury on the 30th June will be consumed by fulfillment of contracts existing and not completed at expiration of fiscal year.

The depot at San Francisco was, by General Order No. 75, A. G. O., 1878, created a general depot of the Quartermaster's Department, but authority over it, so far as relates to the Division of the Pacific, was in the order reserved to the major general commanding on the Pacific Coast. It has been fully organized under the command of Maj. R. N. Batchelder, an officer of ability and of experience with troops both in war and peace. The working of the depot is satisfactory.

The manufacturers on the Pacific coast, to whom certain advantages are secured by act of Congress, are better content to deal with officers directly representing the War Department and stationed among them.

I fear that the improvement in the quality of the clothing of the Army has been carried almost too far in regard to woolen cloths or kerseys.

Officers and soldiers have been educated to demand perfect uniformity in color of their clothing and to complain of the least departure from the shade of the standard material.

Of late heavy losses have been caused to contractors, occasioned by the rejection for color of light blue kerseys, such as the trousers of the troops are made of.

There can be no question of the desire and intention of manufacturers who have bound themselves by contract and invested large capital in the purchase of the material to comply with their contracts, but there is some practical difficulty not yet overcome in securing a uniform shade of light blue with an indigo dye. Materials perfectly satisfactory, except in color, and which were of good color, have, to the great regret of this department and to the great loss of manufacturers, been rejected because the color, though good, differed so much from that of the standard that, if worn in ranks on parade or on review, it would not be uniform.

Formerly, neither officers, soldiers, nor this department insisted upon such exact uniformity; but, as stated above, the eyes of officers and soldiers have been educated till they will not tolerate any difference distinguishable in ranks on parade.

Under the law of March 3, 1879, which requires the Secretary of War to have such supplies for the Army as can be economically made at the military prison at Fort Leavenworth manufactured at that establishment, all the boots and shoes for the Army are made there; chairs for use in barracks are made at the same place, and preparations have been ordered for beginning the manufacture of military harness.

Whether it will be economical to abandon the contract system in the supply of wagons and ambulances for the Army in favor of convict labor at the military prison is at this time the subject of study.

The military prison has furnished during the year 40,000 tent pins, 7,777 barrack chairs, and 51,756 pairs shoes.

The materials for these shoes cost \$1.69½ per pair; prisoners' labor 7½ cents per pair, making the total cost \$1.77½ per pair. The chairs cost 95½ cents each.

NATIONAL MILITARY CEMETERIES.

The number of recognized national military cemeteries is now eighty. The Custer battle-field, on the Little Big Horn, in Montana, was announced as a national cemetery by War Department General Orders 78, August 1, 1879.

A granite block, on which have been inscribed the names of all who fell on that field contending against a savage enemy, has been prepared and is now on its way, via the great lakes and the Northern Pacific Railroad and the Missouri River, to its destination. The stone is simple in form, but it is massive and heavy enough to remain for ages where placed—a landmark of the conflict between civilization and barbarism.

Ten superintendents have been appointed during the year, all honorably discharged disabled soldiers, who have first passed the required examination. Three superintendents have died, three have resigned, and one has been discharged during the year.

Henry Fowler, superintendent of the Chalmette Cemetery, New Orleans, La., died of yellow fever. Civil Engineer S. M. Robbins fell by the same pestilence while on duty at Baton Rouge, La. This year, the superintendents were notified early that if they were threatened by an outbreak of yellow fever, permission to change their location during the prevalence of the disease would be granted. Only one has found

it necessary to avail himself of this permission; the superintendent of the Memphis cemetery.

The number of interments in all the national military cemeteries is 318,455, of which 170,960 are known and 147,495 are unknown.

All the soldiers' graves in national military cemeteries have now been marked with durable headstones of marble, generally; a few, however, are of granite.

Under the act of 3d of February, 1879, contracts for marking with marble headstones the graves of Union soldiers of the late war who have been buried in village or private cemeteries have been awarded to the lowest bidders who complied with the conditions of the advertisement by giving sufficient security.

D. W. Whitney is the contractor for the greater portion of the work, at prices from \$1.99 to \$2.38 each grave, according to distance from quarry and difficulty of access. For the remainder of the work S. G. Bridges was the successful bidder, at \$2.25 for graves in the State of Ohio, and \$2.60 for all others not awarded to Whitney. It is estimated that the average cost of the headstones will be \$2.28 each, set up in place.

Extensive inquiries have been made by letters, circulars, and through the columns of the public press, as to the location of graves needing such monuments and entitled thereto under the law. Thousands of replies have been received and are still reaching this office. It is not probable that any headstones can be erected under these contracts before the opening of the next season.

The cemeteries are reported in good order.

With the consent and approval of the Secretary of War, the six columns of the ancient portico of the War Department, demolished during the early part of this season to make room for the magnificent building now being erected on its site, were removed to the Arlington Cemetery, where they have been used in decorating two of the principal gateways of this extensive and beautiful cemetery.

The middle gate has four of the columns, with entablature. The north-east gate has two of the columns with no entablature; these two will be crowned by funeral vases.

This has preserved these historic columns, among which have moved the chief soldiers of the Army and the chiefs of the War Department during the last sixty years, and they have furnished very handsome gates to the principal cemetery.

There are 208 acres in this cemetery, and a very large space is and will remain unoccupied by military interments. I suggest, therefore, that the attention of Congress be invited to the propriety of making this the National Public Cemetery, and authorizing the interment therein of any public officer, Senator or Member of Congress dying in office in this vicinity or elsewhere, whose friends may desire such a place of burial for him. The present Congressional Cemetery is, I understand, a private burying ground, in which the government owns some lots. The city is moving towards it, and the practice of modern civilization is to forbid interments of the dead within the limits of a city and near the habitations of the living.

The road from Georgetown to the Arlington Cemetery is badly constructed, and it is very desirable that it be improved, for which purpose, as for the road between Vicksburg and the national cemetery near that city, a small appropriation is needed. An expenditure of \$10,000 would effect this and facilitate the progress of many pilgrims to the graves of

their relatives, and the visits of many citizens who wish to see this home of the dead of the last great civil contest.

The appropriation granted for the road to the Vicksburg Cemetery was \$7,000. The original estimate and request was for \$13,000. The road has been partly constructed, and it is hoped that Congress will see fit to grant the remainder of the sum necessary to complete it, viz, \$6,000.

Under the provisions of the sundry civil bill, approved June 20th, 1878, making appropriation of \$1,500 for protection and care of the war prisoners' cemetery on Johnson's Island, Lake Erie, near Sandusky, efforts have been made to procure a conveyance of the land to the United States. The owner has refused to part with the title, which the law made a condition preliminary to any expenditure for improvement, unless under the following conditions: that if at any time the government should cease to keep the lot in good condition, or cease to use it for cemetery purposes alone, it should revert to the present owner, and that some one, to be designated by the said owner, his heirs or assigns, should be appointed to have charge of it at all times.

The expenditures upon the care and improvement and completion of the cemeteries, other than for marble headstones, during the year, have amounted to \$140,140.47. The expenditures for headstones, under the contracts, have been \$480.

The cemeteries are reported in good order, and gradually, under careful cultivation, improving in beauty.

The reports of officers on duty in this office, with many statements and tables, are hereto appended. They give full and clear accounts of all operations of this department during the fiscal year, of sufficient importance to be placed on record in a communication to Congress.

To their zealous and cheerful and intelligent aid is due the success with which the Quartermaster-General's Office has met the innumerable demands upon the resources of the department.

They are Bvt. Maj. Gen. S. Van Vliet, colonel and assistant quartermaster-general; Bvt. Brig. Gen. J. D. Bingham, lieutenant-colonel and deputy quartermaster-general; Lieut. Col. H. C. Hodges, deputy quartermaster-general; Bvt. Lieut. Col. J. M. Moore, major and quartermaster; and Bvt. Lieut. Col. A. F. Rockwell, captain and assistant quartermaster, who has had charge of all the business of the office relating to the national cemeteries.

Respectfully submitted.

M. C. MEIGS,

Quartermaster-General, Brevet Major-General, U. S. A.

HON. GEORGE W. MCORARY,
Secretary of War.

REPORT OF COMMISSARY-GENERAL OF SUBSISTENCE.

WAR DEPARTMENT,
OFFICE COMMISSARY-GENERAL OF SUBSISTENCE,
Washington, D. C., October 9, 1879.

SIR: In compliance with the instructions contained in circular from the Adjutant-General of the Army, dated September 6, 1879, I have the honor to submit the following report of the operations of the Subsistence Department for the fiscal year ending June 30, 1879, with such remarks and recommendations in connection therewith as are thought to be for the best interests of the government and the Army.

RESOURCES AND EXPENDITURES.

Exhibits the aggregate fiscal resources and
 it for the year mentioned, and the balances
 close of the fiscal year:

RESOURCES.

Credit of appropriations of
 June 30, 1878, as follows:

.....	\$4,126 11
Stores and commissary sup- plies act March 11, 1878, being	
.....	67 55
Stores and commissary sup- plies act April 30, 1878, being	
.....	10 50

\$4,204 16

of the Subsistence Department, and of
 Finance Department with the Treasurer,
 authorized depositaries, and in their personal
 hands:

.....
 of the Treasurer United States and in
 his possession on June 30, 1878, since covered

161,561 02

.....
 Subsistence Department
 June 30, 1879, as follows:

111 84

act April 30, 1878.....	\$300,000 00
act June 18, 1878.....	2,015,000 00
Supplies for prisoners of war in rebel	
.....	1,348 75
Stores and commissary supplies act March 3, 1879, "commissary" supplies.....	10,152 28
by Third Auditor under act March 3, 1878, per act March 3, "commissary" supplies, &c.....	7,545 25

2,334,046 28

of War to the Subsistence Depart-
 ment at military prison, Fort Leaven-
 worth for the fiscal year 1879:

Fort Leavenworth, Kansas, 1879...
 Finance Department by the Quartermas-
 ters:

22,037 00

Fort Leavenworth, Kansas, 1879...
 Transactions of the Subsistence Department
 during the fiscal year 1879, as follows:
 Balance of the

2,036 43

Pay of officers..	\$6 97
Balance stores in	
.....	45 81

\$52 78

Balance of the

Pay of officers..	77 64
Balance stores in	
.....	77 62

155 26

Balance of the

Amount to enlisted men for 1878.....	23,216 13
Stores sold to men on credit	
for 1878.....	207 61
Stores lost by the expiration of the fis-	
cal year.....	210 66

Resources—Continued.

By the Quartermaster's Department:	
On account of purchase of beef cattle by that department during the fiscal year 1878	\$183 12
On account of subsistence stores lost in transportation during the fiscal year 1878	426 00
By the Interior Department:	
On account of subsistence stores furnished Indians during the fiscal year 1878	826 11
Deposits by officers of the Army:	
On account of sales at auction, &c., during the fiscal year 1878	48 38
On accounts of sales to civilian employes during the fiscal year 1878	49 92
On account of errors in accounts pertaining to fiscal year 1878	22 88
Of unexpended balances pertaining to fiscal year 1878	3,481 91
Transfers, &c., on settlement of officers' accounts pertaining to the fiscal year 1878	69 19
	<hr/>
	\$28,741 91
To the appropriation, Subsistence of the Army, 1879:	
By the Pay Department:	
On account of tobacco sold to enlisted men during the fiscal year 1879	98,872 60
On account of subsistence stores sold to Indian scouts, &c., during the fiscal year 1879	427 44
On account of subsistence stores sold to officers and enlisted men on credit during the fiscal year 1879	47 99
By the Quartermaster's Department:	
On account of subsistence stores lost in transportation during the fiscal year 1879	235 99
By the Interior Department:	
On account of subsistence stores furnished Indians during the fiscal year 1879	664 23
By deposits by officers of the Army:	
On account of sales to officers and to civilian employes during the fiscal year 1879	275 65
On account of sales of condemned stores at auction, &c., during the fiscal year 1879	155 92
In settlement of accounts during the fiscal year 1879	233 25
	<hr/>
	100,913 16

\$129,863 11

Amounts received by officers of the Subsistence Department and by officers doing duty in the Subsistence Department, from sales of subsistence stores, to the following purchasers during the fiscal year 1879, and taken up for immediate disbursement under the appropriation, Subsistence of the Army, 1879:

Sales to officers of the Army, \$425,687.64; to enlisted men, \$326,008.41; to civilian employes, \$9,080.94; to naval officers, \$2,044.69; to civilian engineers, \$132.86; to the Engineer Corps, \$523.63; to Indian agents, \$1,017.67; to employes of Indian agents, \$213.73; to Soldiers' Home, \$351.98; to superintendents of national cemeteries, \$111.38; to steamers, \$463.08; to United States military prison, Fort Leavenworth, Kansas, \$14,886.41; to United States marshals, \$90.57; of condemned stores at auction, \$8,621.45; of boxes, barrels, &c., \$1,747.69; of garden-seeds and agricultural implements, \$416.29; total

791,403 63

continued.

taken up by officers doing duty in the Subsistence Department account of stores lost, damaged, &c., and in correction in their accounts during the fiscal year 1879:

of the Army, 1879.....	\$1,637 64
sources.....	3,447,801 11

EXPENDITURES.

ded on the books of the Treasury from the appropriation of the Subsistence Department during the fiscal year 1879, as

istence of the Army, 1877:

ment of the accounts of officers.....	\$55 63	
ment of liabilities incurred in fiscal year 1877.....	710 33	
		\$765 96

istence of the Army, 1878:

ment of the accounts of officers.....	5 80	
ment of liabilities incurred in the fiscal year		
to officers for disbursement (but refunded	20,988 12	
contra).....	3,481 91	
		24,475 83

istence of the Army, 1879:

ment of liabilities incurred in fiscal year 1879.....	223 74	
claims for quartermaster's stores and commissary supplies		
ly 4, 1864), per act April 30, 1878.....	10 50	
claims for quartermaster's stores and commissary supplies		
ly 4, 1864), per act March 3, 1879.....	10,152 28	
commutation of rations of prisoners of war in rebel States,		
June 14, 1878.....	1,348 75	
cellaneous claims audited by Third Auditor, under fourth		
act June 14, 1878, per act March 3, 1879.....	7,545 25	
used by officers of the Subsistence Department and officers		
of the Subsistence Department during the fiscal year 1879,		

of the Army, 1878..... 157,837 11

of the Army, 1879..... 2,784,697 06

ed by officers doing duty in the Subsistence Department

of errors in their accounts during the fiscal year 1879... 222 17

ded for the subsistence of military prisoners at United

prison Fort Leavenworth, Kans., during the fiscal

of the United States military prison Fort Leavenworth

1879..... 12,632 66

ded to the Treasury near close of fiscal year 1879, but not

credit of the appropriation by June 30, 1879:

of the Army, 1879..... 6 00

ded to the surplus fund on June 30, 1879:

of the Army, 1876..... \$52 78

of the Army, 1877..... 3,515 41

3,568 19

expenditures..... 3,003,475 52

BALANCES UNEXPENDED.

of the Treasury to the credit of appropriations of the Subsistence Department on June 30, 1879, as follows:

of the Army, 1878..... \$7,747 99

of the Army, 1879..... \$2,014 42

United States military prison Fort Leaven-

worth, 1879..... 10,801 50

quartermaster's stores and commissary sup-

ply July 4, 1864, per act March 11, 1878..... 67 55

20,631 46

Balances unexpended—Continued.

Amounts to the credit of officers of the Subsistence Department and of officers doing duty in the Subsistence Department with the Treasurer, assistant treasurer, and designated depositaries, and in their personal possession, on June 30, 1879, as follows:

Subsistence of the Army, 1878.....	\$244 00	
Subsistence of the Army, 1879.....	421,423 85	
Support of the United States military prison Fort Leavenworth, Kans., 1879 (including Treasury drafts for \$575 in transit) on June 30, 1879.....	1,539 25	87 10
		423,207 10
Amount in hands of representatives of deceased officers to be collected:		
Subsistence of the Army, 1878.....		109 84
Amount stolen in October, 1878, to be collected from the officer responsible:		
Subsistence of the Army, 1879.....		377 19
Total balances unexpended.....		444,325 59

In connection with the subject of appropriations for subsistence of the Army, I desire to invite your special attention, and through you that of Congress, to the following note upon the estimate for appropriations for subsistence of the Army for the fiscal year ending June 30, 1881:

It is respectfully recommended that the appropriations for subsistence of the Army be made available from the passage of the act making the appropriation. For several years a portion of the appropriation (\$300,000) has been made available prior to the commencement of the fiscal year for the purchase of supplies intended for remote posts. Should the appropriation for the year be made available from the passage of the act making it, it will, it is believed, be in the interest of economy, by enabling the purchase and shipment not only of all stores for remote posts, which can be more economically shipped in the spring than after the 30th of June, but of those which should be shipped early in the spring, instead of the heat of summer, to avoid loss and transportation. In the act making appropriations for expenses of the Indian Department for the year ending June 30, 1880, it was provided "that so much of the appropriation * * * made as may be required to pay for goods and supplies * * * shall be immediately available."

CONTRACTS AND PURCHASES.

During the fiscal year ended June 30, 1879, 131 newspaper advertisements and 111 circulars and posters inviting proposals for subsistence stores were reported to this office. There were, also, received during the same period 343 contracts for fresh meats, 89 contracts for miscellaneous articles, 30 contracts for complete rations for recruiting parties and recruits, and 1,860 contracts consisting of written proposals and acceptances.

It has been my intention that, as far as consistent with a due regard to economy and the procurement of stores of a proper quality, supplies should be purchased from producers and manufacturers or importers nearest the points of consumption. It may be that my wishes and instructions have not been entirely complied with in some cases, but as a rule the plan I have above indicated has been carried out.

In connection with the subject of points of procurement of supplies and the furnishing of supplies to posts, attention is invited to the following extracts from the annual reports of officers of the Subsistence Department for the last and previous years:

In the annual report of Maj. J. P. Hawkins, chief commissary of subsistence, Department of the Platte, for the year 1877, he states:

Fort Cameron, Utah, is * * * supplied from Omaha, except flour, vinegar, and vegetables; flour being purchased in the vicinity of the post, vinegar at Ogden, and vegetables in the vicinity of the post, and largely produced in company gardens.

Cheyenne Depot, Wyoming, on the line of the Union Pacific Railroad, 516 miles from Omaha, is used as a distributing depot. Large quantities of Colorado flour are pur-

closed here for shipment to the different posts; also, potatoes and onions, and occasionally hard bread.

Camp Douglas, Utah, is * * * supplied from Omaha, except flour, dried peaches, salt, vinegar, and vegetables, which are purchased at Salt Lake City and Ogden.

In his report for the last fiscal year he states:

During the past year a mill has been started in the vicinity of Fort Brown, Wyoming. Samples of the flour and prices were furnished me and found satisfactory. The acting commissary of subsistence at Fort Brown was instructed to purchase some of the flour and report to the chief commissary of subsistence of the department about the 1st of September, 1879, as to the quality compared with flour heretofore furnished the post and the price at which it could be obtained.

Capt. J. H. Gilman, chief commissary of subsistence, Department of the Missouri, in his annual report for the last fiscal year, states:

As a rule, all posts in this department have been supplied in the manner described in my report of August 27, 1878, and the very small amounts of subsistence stores lost or spoiled at posts in this department during the last two years go to show the economy of often replenishing stores at posts by frequent shipments, instead of putting in supplies for six or eight months at a time, as was formerly the practice before the extension of the railroads. It has also the advantage of securing for the officers and men better food by sending fresh stores from month to month. * * *

There are now several very extensive packing-houses in this vicinity (at Kansas City and Atchison), which afford largely-increased facilities for purchasing all kinds of salt meats and at considerably lower prices probably than they could be purchased elsewhere and laid down here. The sugar-cured meats especially, which have been purchased here in the past year for the first time in very large quantities from packers located in this vicinity, have apparently given general satisfaction both as to price and quality.

The wheat crop of Kansas this year is very large, and large mills are constantly being erected, so that there is every prospect of an abundant supply of flour at low prices during the present year. All the flour purchased here is made from winter or fall wheat, and of excellent quality. A large portion of that purchased here is taken directly from the millers in the country between here and the posts, saving thereby something in price and considerable in transportation. Large quantities of excellent flour has for several years been taken at Junction City and Wichita.

On account of the reduction in cost of transportation and of some complaints still of New Mexican flour, it was thought advisable to supply the posts in New Mexico this present year with a large proportion of States flour than heretofore, and the chief commissary of subsistence of the district of New Mexico was so advised.

From his report of July 26, and indorsement thereon, this view is concurred in by both the district commissary of subsistence and district commander, both of whom evidently regarding an increase in quantity of States flour as very necessary.

The following is an extract from the report of the chief commissary of the District of New Mexico (Capt. F. F. Whitehead):

During the past fiscal year all States flour has been issued at the posts of Forts Union, Garland, and Lewis; and, owing to the fact that contracts for wagon transportation to the majority of posts in this district have been let from Las Vegas, N. Mex., the chief commissary of subsistence of the Department of the Missouri has decided to furnish, in future, all States flour for issue at Fort Marcy and half at all other posts, and beans and salt to all posts in the district where he can have them delivered from the depot at Fort Leavenworth at a less cost to the government than they can be purchased for in New Mexico. The increased allowance of States flour for issue will be a decided improvement, as it seems impossible to manufacture a good grade of flour in this Territory.

Capt. C. B. Penrose, chief commissary of subsistence, Department of Texas, states that—

The Texas flour has proved under their improved system of milling very satisfactory, and although not quite equal in whiteness to Saint Louis flour, makes when mixed equally good bread. * * *

It is to be regretted that owing to the extreme drought the wheat crop is a failure in many parts of this State, and it is feared that many mills in the State will be unable to compete in the lettings for the coming year.

Capt. C. P. Eagan, chief commissary of subsistence, Department of Arizona, reports that—

Flour for issue is now purchased under contract for all the posts in the department, except for Forts Yuma and Mojave, which latter are supplied on requisition from the

lepot at San Francisco, as the government can lay down flour at those posts at less figures than the millers can deliver it from the grain-raising districts of the Territory. The flour procured under contract comes from Arizona and New Mexico, and is not equal to the California article.

The following table will indicate the average prices of the components of the ration in each year for the last three years:

Articles.	1877.	1878.	1879.
	Per pound, gallons, &c.	Per pound, gallons, &c.	Per pound, gallons, &c.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
Pork	9.24	8.53	8.10
Bacon	10.93	8.74	8.68
Fresh beef	8.497	8.289	7.06
Salt beef	8.98	7.22	5.84
Flour	3.58	3.40	2.61
Hard bread	5.08	5.33	4.65
Cornmeal	1.71	1.61	1.51
Beans	3.26	3.74	2.91
Pease	3.68	3.80	3.32
Rice	8.85	7.12	7.08
Tominy	2.78	2.29	1.94
Coffee, green	21.48	20.56	18.25
Coffee, roasted	26.68	25.94	22.71
Sugar	10.60	9.53	8.27
Vinegar	23.45	21.44	18.87
Candles	10.13	15.47	14.36
Soap	0.06	5.68	5.21
Salt .....	.903	.891	.723
Pepper	27.61	28.14	21.34

It will be observed that the cost of supplies has been constantly diminishing since 1877, notably in the meat and flour components of the ration. The construction of railroads, the settlements in the vicinity of posts, the cultivation of lands adjacent thereto, and their utilization in feeding stock, have greatly reduced the cost of feeding the Army, by reducing the original cost of the stores and of transportation, and by avoiding the wastage and loss which formerly resulted from procuring stores from remote points, transporting them long distances, and keeping them on hand in large quantities for long periods.

Attention is particularly invited to the interesting paper on the cattle and sheep interests of Wyoming and Colorado, prepared by Capt. W. H. Nash, commissary of subsistence, transmitted with this report, and which I request may be considered as a part hereof, and be published with it.

ISSUES TO INDIANS AND TRANSFER OF SUBSISTENCE TO INDIAN AGENTS.

The value of stores (cost of transportation added) issued to Indians and transferred to Indian agents during the fiscal year ending June 30, 1879, for which reimbursement has been requested through the Secretary of War, from the Indian Bureau, the date and place of issue or transfer, and to whom made, is presented in the following table:

Grand totals brought forward.....	\$47,546.55 + \$8,229.67 = \$55,776 22
Amount received from Indian Department on account of above is.....	684 23
Balance due Subsistence Department.....	55,111 99

It will be observed that the Subsistence Department has been reimbursed but little in excess of one per cent. of the value of the stores,

\$55,776.22, which have been issued and transferred, as appears from the above statement.

In order that the views of the Indian Department and this Bureau upon the subject of issues to Indian prisoners may be properly understood, attention is invited to the following communications and indorsement:

DEPARTMENT OF THE INTERIOR,
OFFICE OF INDIAN AFFAIRS,
Washington, April 21, 1879.

SIR: I have the honor to acknowledge the receipt, by reference from the department, of a letter of the honorable Secretary of War, dated April 14, 1879, inclosing one from R. Macfeely, Commissary-General of Subsistence, requesting you to cause the Subsistence Department to be reimbursed for all sums due on vouchers, for subsistence stores furnished to Indians, submitted to the department during the fiscal years 1878 and 1879.

In reply, I would state that this office is in receipt of a large number of vouchers for subsistence issued by the War Department to Indian *prisoners* during the fiscal years 1878 and 1879; but Congress has failed to make any appropriation to this office for the payment of said claims.

On examination of the estimates of appropriations required for the service of the military establishment under the War Department for the fiscal years 1878 and 1879, I find under the head of "Subsistence Department, subsistence of the Army," an estimate for 182,500 rations, at 24 cents per ration, for each year for prisoners of war (Indians), and in the acts making appropriations for the support of the Army for the fiscal years 1878 and 1879, in the section providing for the Subsistence Department, the following language is used: "For subsistence of regular troops, Indian scouts and guides, and Indian prisoners," &c., two million three hundred and seventy thousand dollars for 1878, and two million three hundred and fifteen thousand dollars for 1879. I am therefore of the opinion that Congress has made provision for the support of Indian prisoners in the Army appropriation bills for 1878 and 1879. There are no funds at the disposal of this office for the payment of the accounts presented, and the same will be held subject to the order of the honorable the Secretary of War.

Very respectfully,

E. J. BROOKS,
Acting Commissioner.

Hon. SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
Washington, April 25, 1879.

SIR: I have the honor to acknowledge the receipt of your letter of the 14th instant, inclosing a communication from General R. Macfeely, Commissary-General of Subsistence, calling for reimbursement to the Subsistence Department for all sums due on vouchers for subsistence stores furnished to Indians, submitted to the department during the fiscal years 1878 and 1879.

In reply, your attention is respectfully invited to the inclosed copy of letter, dated the 21st instant, from the Commissioner of Indian Affairs, to whom the subject was duly referred.

Very respectfully,

C. SCHURZ, *Secretary.*

The Hon. SECRETARY OF WAR.

[First indorsement.]

WAR DEPARTMENT,
OFFICE COMMISSARY-GENERAL OF SUBSISTENCE,
Washington, May 9, 1879.

Respectfully returned to the honorable Secretary of War, with the recommendation that the Indian Department may be requested to reimburse the Subsistence Department the cost of the rations issued by it during the current fiscal year for the subsistence of whom by the Indian Department appropriations were made, whether the Indians were prisoners or not when the Subsistence Department made the issues.

The accompanying statement, marked A, will indicate that issues to the value of \$15,004.09 have been made during the current fiscal year to *Indians not prisoners*.

The statement marked B, that issues to the value of \$32,147.85 have been made to *Indians who were prisoners*.

While it is true that an estimate was submitted by this department for subsisting 500 Indian prisoners during the current fiscal year and an appropriation for the purpose made, it was not understood by me that this appropriation or any portion of it could be expended (unless the department was to be reimbursed) for subsisting

Indians for the subsistence of whom by the Indian Department an appropriation had been or should be made; but it was intended for Indian prisoners for the subsistence of whom there was no other appropriation; in other words, it was not proposed by this department to ask that a double appropriation for the subsistence of any Indians be made, and it is respectfully submitted that this department should be reimbursed for the value of all issues made by it to Indians for the subsistence of whom an appropriation has been made and turned over to the Indian Department.

It is respectfully submitted that the cost of subsisting Indians is not legally transferred from the Indian to the War Department simply by the Indians becoming prisoners of war, and that the Indian Department cannot legally expend the money appropriated for the subsistence of such prisoners in subsisting other Indians, as appears to have been the case, if it has now no funds to pay for subsisting Indian prisoners for the subsistence of whom it had an appropriation.

With reference to the statement of the Acting Indian Commissioner that there are no funds at the disposal of that office for the payment of the accounts presented, it is respectfully suggested that, if the accounts are proper ones to be paid, Congress is now in session and appropriations for the purpose can be requested; in the mean time, I recommend that no further issues be authorized by the War Department to Indians for the subsistence of whom, under the direction of the Interior Department, an appropriation has been made, unless that department agrees to reimburse the Subsistence Department the cost of the rations issued.

R. MACFEELY,
Commissary-General of Subsistence.

Comment on the above is unnecessary. The papers submitted present the views of the Indian Department and of this office, with reference to reimbursement for the issues and transfers made, and exhibit the fact that a large amount justly due to this department by the Indian Department has not been paid.

In making my estimate for appropriation for the next fiscal year, I have included in the estimate for prisoners of war only Indians "for the subsistence of whom no other appropriation is made," being of the opinion, as stated in the indorsement above referred to, that it was not intended that "double appropriations" should be made for the same persons.

In addition to the issues and transfers for which reimbursement was requested, stores have been issued to Indians, and reimbursement not requested, as follows:

To friendly Indians.....	\$1,360 13
To destitute Indians.....	558 96
To Indians visiting posts under paragraphs 1202 and 1203, Revised Regulations, edition 1863.....	009 84

ISSUES TO VOLUNTEERS AND DESTITUTE PERSONS.

By reason of the necessities of the service and the demands of humanity, the following issues have been made during the fiscal year 1879:

	Rations.
To volunteers.....	1,744
To destitute citizens and citizen prisoners.....	3,879

On the 28th of September the Secretary of War authorized the issue of provisions to sufferers from the Deadwood fire, the issues to be limited to such quantities as could be spared from Fort Meade, without too far diminishing necessary supplies for that post, and to be continued only while it is impossible for the sufferers to procure stores elsewhere.

OIL.

The issues of oil for exterior illumination at the various posts under the provisions of General Orders No. 17, Headquarters of the Army, Adjutant General's Office, February 8, 1870, amount to 5,771½ gallons for the fiscal year 1879.

On the 8th day of May, 1879, I recommended to the honorable Secretary of War, that the major-general commanding the Military Division of the Atlantic be instructed to convene a board of officers at Fort Columbus, New York Harbor, for the purpose of "fully examining into and reporting upon the subject of lighting company quarters with oil," and that the board "should consist of an inspector-general, a quartermaster, a commissary, a medical officer, and the commanding officer of Fort Columbus."

As this recommendation was not at first favorably considered, I renewed the application to the honorable Secretary of War on June 5, 1879, stating—

The subject of properly lighting company quarters so that a suitable place for instruction and recreation in the evening may be afforded enlisted men, and they thus be induced to spend their spare time in the evenings in their quarters instead of at questionable places of resort, has on several occasions been brought to my attention, and I wish to do all that I can to afford the means to effect such a desirable result. I do not believe such a result can be effected with the present allowance of candles, nor with any allowance of candles as cheaply as with oil.

The honorable Secretary of War reconsidered his decision after the receipt of the communication from which the above is an extract, and directed that a board should be ordered as originally requested.

The board was appointed by Maj. Gen. W. S. Hancock, commanding Military Division of the Atlantic, and consists of Col. N. H. Davis, inspector-general, Col. M. D. L. Simpson, Subsistence Department, Assist. Surg. J. P. Kimball, Capt. J. P. Sanger, First Artillery, and First Lieut. Charles Bird, Twenty-third Infantry.

It is understood that the board is making an exhaustive investigation of the subject referred to; and I trust that the result will be reached at an early date of lighting company quarters in such a manner as to secure the end sought by me in making my recommendations for the appointment of a board.

ARTICLES TO BE SOLD TO OFFICERS AND ENLISTED MEN.

I would respectfully renew the recommendation made in my last annual report:

That section 1144 Revised Statutes be so amended as to authorize the Commissary-General, with the approval of the Secretary of War, to designate the articles which shall be kept on hand by the Subsistence Department for sale to officers and enlisted men, and that sections 1299 and 1300 be amended accordingly.

The returns of the stores purchased and sold being examined in this office, the Commissary-General can readily determine which of the articles purchased is not in demand, or cannot be supplied without much loss to the government; and the wants of the officers and enlisted men can probably be more readily obtained by the Commissary-General, who is in constant correspondence with the officers performing subsistence duty at all posts, than by the inspector-general, who visit the posts at intervals.

In the act making appropriation for subsistence of the Army for the current fiscal year, it is—

Provided, That to the cost of all stores and other articles sold to officers and men, except tobacco, as provided for in section one thousand one hundred and forty-nine of the Revised Statutes, ten per centum shall be added to cover wastage, transportation, and other incidental charges.

I recommend that to the exception made, viz, tobacco, "provided for in section one thousand one hundred and forty-nine," there be added, sales made to company messes. Such stores are, as a rule, purchased from funds received by the companies from the sales of savings of the ration to the Subsistence Department, and as the department pays the companies only the cost of the stores it purchases from them, it is thought that it is hardly

ist to them to charge for supplies sold, to be used by the messes in lieu of the articles sold to the department, ten per centum in addition to their cost.

TOBACCO.

During the fiscal year ending June 30, 1879, returns received show that tobacco to the value of \$125,211.42 was supplied to enlisted men on tobacco returns.

In addition to the above, 28,927½ pounds of chewing, and 37,276½ pounds of smoking tobacco were sold to officers and enlisted men.

I deem it due to the enlisted men of the Army to especially invite your attention to the following extract from my last annual report, and to urge that the attention of Congress be invited to it:

From information received at this office, I am of the opinion that 16 ounces per month is not as much as a majority of enlisted men desire to purchase. I therefore recommend that the limit be increased by law to 24 ounces per month.

I also recommend that the law be further modified so as to allow the tobacco to be paid for upon its receipt, or, if not paid for, charged upon the pay-rolls of the soldier for the month in which the purchase is made.

SUPPLIES LOST IN TRANSPORTATION, AND CONDEMNED.

The value of the stores reported on returns for the year ending June 30, 1879, as lost in transportation and no one found responsible therefor, and as extraordinary wastage, &c., is.....	\$11,596 73
The value of supplies inspected and condemned during the same period was.....	\$21,819 80
From such of the above as were sold there was realized the sum of.....	8,777 37
Net loss to the government on account of supplies condemned.....	13,042 43
Total loss on account of stores lost in transportation and condemned.....	24,639 16
The value of the stores lost in transportation during the fiscal year 1879, where responsibility for the loss has been fixed, is.....	1,757 86
The amount collected and taken up on officers' accounts or covered into the Treasury on above account, is.....	481 18
Leaving balance to be collected and covered into the Treasury.....	1,276 68

SUBSISTENCE OF RECRUITING PARTIES AND RECRUITS.

The amount expended during fiscal year for subsistence of recruiting parties and recruits was \$26,631.49.

COMMISSARY-SERGEANTS.

During the last fiscal year three commissary-sergeants have been tried and found guilty of misappropriation of subsistence stores or funds, and dishonorably discharged the service, forfeiting all pay and allowances due them. One of them was sentenced to imprisonment for eight years for his offenses. In the case of a fourth it was found, after his discharge by expiration of service, that a deficiency in stores existed for which he claimed to have been responsible.

After a careful examination of the evidence thus far submitted in each of the first three cases above referred to, I have reached the conclusion that in no case could the misappropriations have occurred to the extent that they did had the officers with whom those sergeants were serving properly performed their duties. I have recommended that the forfeited pay and allowances of those dismissed by sentence of court-martial be

transferred to the credit of the appropriations of the Subsistence Department to be applied as a reimbursement for the losses which have occurred; and should the losses in any cases be in excess of the amounts so forfeited, I shall, in the absence of further evidence to relieve the officers of the appearance of neglect of duty on their part, recommend that they be held pecuniarily responsible to the government for the remainder necessary to make a complete reimbursement.

The duties and responsibilities of officers doing duty in the Subsistence Department, who may be assisted by commissary-sergeants, are fully set forth in paragraphs II, III, and IV, General Orders No. 31, Headquarters of the Army, Adjutant-General's Office, 1878. It had been my expectation, upon the promulgation of that order, that proper care would thereafter be taken against losses by the malfeasance of any commissary-sergeant, but I regret that the object of that order has not been more fully attained than the results of the past year indicate.

CIVILIAN EMPLOYÉS.

In my annual report for the year 1876, I stated the number of civilian employés to be 51 clerks and 75 other employés, 126 in all; and that "it is believed that but little, if any, further reduction can be made without impairing the efficiency of the department." The number of clerks employed in June last was the same as reported in 1876, the number of other employés 68, a reduction of 7 employés. The clerical force appears to be reduced to about the minimum consistent with efficiency.

ARMY COOKS AND BAKERS.

On the 8th of November, 1876, I stated in a communication to the honorable Secretary of War:

I am of the opinion that the efficiency of the Army would be materially increased, and desertions lessened, were a cook enlisted for each company with extra pay, say \$4 in excess of the pay of a private, and schools for the instruction of cooks established at the recruiting-depôts at Fort Columbus, N. Y., and Columbus Barracks, Ohio.

In my annual report for the year 1876, I stated—

I also think that bakers should be specially enlisted, paid extra-duty pay, say \$4 per month, and assigned to posts as commissary-sergeants. I recommend that should schools for cooks be established at recruiting-depôts, bakers should also be instructed at the same schools.

I again invite the attention of the honorable Secretary of War to this subject in connection with the following extract from the report of the Board on Army Cooking, convened by General Orders No. 117, Headquarters of the Army, Adjutant-General's Office, series of 1877:

The Army needs the enlistment of men who have an aptitude for cooking, and the establishment of a school for their education in the economy of the kitchen. * * *

Extra compensation is allowed to enlisted men when on duty as mechanics, artisans, and laborers, when performing such work, but none to the company cook, whose duty, if conscientiously done, is the most onerous performed by the enlisted man. Eight hours is the time fixed for the labor of the extra-duty men, who are rated and paid as such. The duties of the competent and conscientious company cook commence two hours before reveille, and frequently are not concluded before tattoo. The wear and tear of the clothes of a company cook is double that of any enlisted man in the same company, yet the cook receives no extra compensation therefor, whilst the carpenter, blacksmith, or laborer detailed from the same company does.

An important aid to good soldiering is good cooking. This cannot be obtained without good cooks, and good cooks cannot be obtained without education and adequate compensation. If one company cook, while actually performing duty as such, was allowed 50 per cent. advance on his clothing allowance and a monetary compensation

30 per cent. per day, to be paid either from the Subsistence Department or the Quartermaster Department, a class of men would be secured to the Army who would economically use the ration, cook it acceptably, and be anxious to retain his position for the extra compensation it brings, whilst at present he is only glad to be relieved from kitchen duty for lighter work.

I respectfully urge the Secretary of War to invite the attention of Congress to this subject, believing the subject one of the utmost importance in connection with the health, comfort, and efficiency of the enlisted men of the Army.

ARMY COOKING.

The board appointed by General Orders No. 117, Headquarters of the Army, Adjutant-General's Office, series of 1877, to make experiments in Army cooking and prepare a manual for Army cooks, has completed its labors in the most satisfactory manner. Authority has been given by the Secretary of War for the publication and distribution to the Army of such portion of the manual as in the opinion of the Surgeon-General and myself appeared best adapted to the purpose for which the same was desired.

BUREAU CLERKS.

I had intended to set forth in this report what I deem the necessity for a reorganization of the number and classes of clerks in this office; but the Secretary of War having, under date of September 17, directed that this shall be made the subject of a special communication to be submitted to him after the meeting of Congress, its consideration is therefore deferred.

ACCOUNTS AND RETURNS.

There were received during the year from 467 officers performing duty in the Subsistence Department the following accounts and returns, viz:

Accounts-current.....	2,614
Returns of provisions.....	2,425
Returns of commissary property.....	960

Total received..... 5,999

During the same period there were examined in this office and forwarded to the Third Auditor (the returns for file and the accounts-current for final settlement) the following:

Accounts-current.....	2,558, accompanied by....	36,092 vouchers.
Returns of provisions.....	2,396, accompanied by....	30,189 vouchers.
Returns of commissary property.....	952, accompanied by....	2,376 vouchers.

Total..... 5,906, accompanied by.... 68,657 vouchers.

In connection with the above there were 4,722 letters written, and 1,077 referred by endorsement.

When it is understood that the examination of the accounts and returns, and of the vouchers submitted therewith, includes a careful examination and revision of all the computations involved, as well as the ascertainment of the fact whether all laws, regulations, and orders relating to purchases, to payments, and to issues have been complied with in every detail of the accounts and returns, the extent and importance of the clerical labor concerned will be appreciated.

In addition to the money accounts and returns of property, returns of official postage-stamps to the number of 1,574, accompanied by 4,705 vouchers, have been examined and filed.

As accounts and returns were received from 223 officers during the

month of June last, it appears that about 200 officers not belonging to the Subsistence Department were performing subsistence duty. This number, it is assumed, is about the average number constantly employed during the year.

CLAIMS RECEIVED AND DECIDED.

Act July 4, 1864.—Under the third section of the act of July 4, 1864, and the acts supplementary thereto, 294 claims were filed in this office during the fiscal year 1879 for examination. Decisions have been rendered, during this period, in 43 cases of this class of claims. Of these, 21, amounting to \$15,778.89, were allowed, and recommended to the Third Auditor of the Treasury for payment, and 22, amounting to \$14,815.60, were rejected. The number decided embraced 21 cases re-examined upon additional evidence, of which 15 were allowed and 6 again rejected.

Commutation of rations of prisoners of war.—During the fiscal year, 1,288 claims for commutation of rations to Union soldiers while held as prisoners of war were received at this office. Of this class of claims 23 were not reached for examination; 1,476 were partially examined; 601 were rejected; and 329, amounting to \$11,198.48, were allowed and recommended to the Third Auditor of the Treasury for payment.

Miscellaneous claims.—In addition to claims under the above-mentioned special acts of Congress, 247 miscellaneous claims, amounting to \$34,048.32, were received during the fiscal year; of which 93, amounting to \$26,748.36, were recommended for payment; 46, amounting to \$5,546.35, were rejected; 103, amounting to \$1,679.05, partially examined; and five, amounting to \$74.56, were not reached for examination. Of this class of claims, 70 old cases were completed and allowed in the sum of \$2,742.89; 29, amounting to \$3,187.66, rejected; and 26, amounting to \$848.20, partially examined. Of rejected (old) claims of this class, 15 were re-examined upon additional evidence; 5 of which, amounting to \$160.80, were allowed; 3, amounting to \$1,105.80, were again rejected; and 8, amounting to \$243.55, were not reached for decision.

Letters and indorsements.—In connection with the above-mentioned three classes of claims, 8,878 letters and indorsements were written.

CLAIMS PENDING.

The following-described claims were pending in this office at the close of the fiscal year, viz:

Act July 4, 1864.—Under section 3, act of July 4, 1864, 1,066 claims, amounting to \$716,861.89; of which 683, amounting to \$494,155.83, have been partially examined, and 383, amounting to \$222,706.06, have not been reached for examination.

Commutation of rations of prisoners of war.—Two thousand four hundred and fifty-six claims for commutation of rations (prisoners of war), the amount of which cannot be approximately estimated. Of these, 2,433 have been partially examined, and 23 not reached for examination.

Miscellaneous claims.—Four hundred and five miscellaneous claims, amounting (estimated, in part) to \$32,755.30, all of which have been partially examined, with the exception of 5, amounting to \$74.56.

By section 3 of the act approved March 3, 1879, it is provided "that all claims under the third section of the act of July 4, 1864, and the acts supplementary thereto, which are not presented and filed prior to the 1st day of January, A. D. 1880, shall be forever barred." During the last year less than 300 claims under these acts were presented. It may be assumed that the claims which will be presented between July 1, 1879, and January 1, 1880, will not exceed 150. Should this number be

presented, the number of this class then to be examined will be about 1,200. It is due to the claimants and the government that they should be examined at the earliest practicable date, and it is suggested that the necessary legislation to enable this to be done shall be recommended to Congress, there being no authority of law at present for the employment of officers or agents in making the required investigations in connection with these claims.

In bill H. R. 2, Forty-sixth Congress, first session, proposing "appropriations for the legislative, executive, and judicial expenses of the government for the fiscal year ending June 30, 1880, and for other purposes," and was concurred in by the Senate, although the bill did not become a law, was the following clause, viz: "That the Secretary of War is hereby authorized to detail as many officers of the Army as may be necessary to investigate claims not heretofore examined by the Commissary-General for allowance." I recommend that the proposed act be so modified as to authorize the Commissary-General to detail such officers of the Subsistence Department as may be necessary to investigate claims not already decided by him, or those which, having been decided, may be reopened on account of the new evidence submitted. I am of the opinion that all the examinations necessary may be made by officers of the Subsistence Department, and that the service of no other officers will be required.

STATIONS OF OFFICERS OF THE SUBSISTENCE DEPARTMENT.

The stations of officers of the department on the first of October is shown in the report hereto appended.

The following changes in stations have been made since my last annual report:

Maj. Thomas C. Sullivan, from duty as purchasing and depot commissary of subsistence at New Orleans, La. to Vancouver Barracks, Wash., as chief commissary of subsistence, Department of the Columbia, December 10, 1878.

Capt. William H. Bell, from duty as chief commissary of subsistence, Department of the Columbia, to New Orleans, La., as purchasing and depot commissary of subsistence, relieved from that duty June 2, 1879, and assigned to duty as purchasing and depot commissary of subsistence at Washington, D. C., June 10, 1879.

Capt. Thomas Wilson, from duty as purchasing and depot commissary of subsistence at Washington, D. C., to Omaha, Nebr., as chief commissary of subsistence, Department of the Platte, July 1, 1879.

Maj. John P. Hawkins, from duty as chief commissary of subsistence, Department of the Platte, Omaha, Nebr., to New York City, N. Y., as purchasing and depot commissary of subsistence, August 1, 1879.

Maj. Beekman DuBarry, from duty as purchasing and depot commissary of subsistence at New York City, N. Y., to West Point, N. Y., as treasurer of the Military Academy, and quartermaster and commissary of the battalion of cadets, and also as disbursing officer of the Military Academy, September 1, 1879.

Capt. Charles A. Woodruff, depot commissary of subsistence at Fort Leavenworth, Kans., was (by Special Orders 218, Headquarters of the Army, Adjutant-General's Office, September 20, 1879) ordered to relieve Capt. F. F. Whitehead of his duties as chief commissary of subsistence of the District of New Mexico. Captain Whitehead on being relieved to proceed to New Orleans, La., on or before November 15, 1879, and assume the duties of purchasing and depot commissary of subsistence in that city.

In compliance with instructions given by the division and department

Medical and Hospital Department, 1877:

Balance from previous fiscal year.....	\$5 91
Appropriated by act of March 3, 1879.....	1,295 96
Refunded during the year.....	20 60
	<hr/>
	1,322 47
Disbursed during the year.....	1,309 06
	<hr/>
Balance June 30, 1879.....	13 41

Medical and Hospital Department, 1878:

Balance from previous fiscal year.....	99,988 67
Refunded during the year.....	100 00
	<hr/>
	100,088 67
Disbursed during the year.....	87,923 50
	<hr/>
Balance June 30, 1879.....	12,165 17

Medical and Hospital Department, 1879:

Appropriated by act of June 18, 1878.....	200,000 00
Refunded during the year.....	54 00
	<hr/>
	200,054 00
Disbursed during the year.....	128,144 03
	<hr/>
Balance June 30, 1879.....	71,009 97

The greater part of this balance has since been disbursed, and the remainder will be required in fulfilling contracts made before June 30.

Museum and Library, 1878:

Balance from previous fiscal year.....	\$2,274 11
Disbursed during the year.....	2,274 11

Museum and Library, 1879:

Appropriated by act of June 18, 1879.....	10,000 00
Disbursed during the year.....	9,284 48
	<hr/>
Balance June 30, 1879.....	715 52

Medical and Surgical History:

Balances from previous fiscal year, continued by act of June 18, 1879.....	28,657 05
Disbursed during the year.....	8,725 40
	<hr/>
Balance June 30, 1879.....	19,931 65

Artificial Limbs, 1877:

Balance from previous fiscal year.....	15,399 00
Disbursed during the year.....	\$4,431 90
Carried to the surplus fund.....	7,364 80
	<hr/>
	11,796 70

Balance June 30, 1879.....	3,002 80
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Artificial limbs, 1878:

Balance from previous fiscal year.....	413 67
Drawn from appropriation for 1879 under act of June 20, 1878.....	4,500 00
	<hr/>
	4,913 67
Disbursed during the year.....	2,782 10
	<hr/>

Balance June 30, 1879.....	2,131 57
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Artificial limbs, 1879:

Appropriated by act of June 20, 1878.....	105,000 00
Transferred for the service of the fiscal year 1878.....	\$4,500 00
Disbursed during the year.....	66,463 00
	<hr/>
	70,953 00

Balance June 30, 1879.....	34,047 00
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Appliances for disabled soldiers, 1877 :

Balance from previous fiscal year.....	\$4,715 50
Disbursed during the year.....	\$2 00
Carried to the surplus fund.....	4,713 50
	<hr/> 4,715 50

Appliances for disabled soldiers, 1878:

Balance from previous fiscal year.....	2,907 50
Disbursed during the year.....	71 50
	<hr/>

Balance June 30, 1879 2,836 00

Appliances for disabled soldiers, 1879:

Appropriation by act of June 20, 1878	3,000 00
Disbursed during the year.....	92 00
	<hr/>

Balance June 30, 1879..... 2,908 00

Expended in providing trusses for ruptured soldiers, seamen, and marines under the act approved May 28, 1872, extended by the act of March 3, 1879..... 7,979 99

ARTIFICIAL LIMBS AND APPLIANCES.

There were furnished during the fiscal year, in kind, trusses, 442; artificial legs, 39; arms, 2; hands, 9; appliances for injured legs, 4. By commutation, legs, 168; arms, 297; feet, 16; appliances for injured limbs, 743.

HEALTH OF THE ARMY DURING THE FISCAL YEAR ENDING JUNE 30, 1879.

The monthly reports of sick and wounded received at this office, up to September 1, represent an average mean strength of 21,716 white and 1,947 colored troops.

Among the *white troops*, the total number of cases of all kinds reported as taken on the sick list was 37,810, being at the rate of 1,741 per 1,000 of mean strength. Of this number, 32,682, or 1,505 per 1,000 of strength, were taken on sick report for disease, and 5,128, or 236 per 1,000 of strength, for wounds, accidents, and injuries of all kinds.

The average number constantly on sick report during the year was 965, or 44 per 1,000 of mean strength. Of these, 761, or 35 per 1,000 of strength were constantly under treatment for disease, and 204, or 9 per 1,000 of strength, for wounds, accidents, and injuries.

The total number of deaths from all causes reported among the *white troops* was 266, or 12 per 1,000 of mean strength. Of these, 162, or 7 per 1,000 of strength, died of disease, and 104, or 5 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 142.

The total number of white soldiers reported to have been discharged the service on "surgeon's certificate of disability" was 677, or 31 per 1,000 of mean strength.

Among the *colored troops*, the total number of cases of all kinds reported was 3,932, or 2,020 per 1,000 of mean strength. Of these, 3,455, or 1,775 per 1,000 of strength, were cases of disease, and 477, or 245 per 1,000 of strength, were wounds, accidents, and injuries. The average number constantly on sick report was 77, or 40 per 1,000 of strength; of whom 62, or 32 per 1,000 of strength, were under treatment for disease, and 15, or 8 per 1,000 of strength, for wounds, accidents, and injuries.

The total number of deaths of colored soldiers reported from all causes was 28, or 14 per 1,000 of mean strength. Of these, 15, or 8 per 1,000 of strength, died of disease, and 13, or 6 per 1,000 of strength, of wounds, accidents, and injuries.

The proportion of deaths from all causes to cases treated was 1 to 140.

The total number of colored soldiers reported to have been discharged on "surgeon's certificate of disability" was 42, or 22 per 1,000 of mean strength.

WORK PERFORMED IN THE RECORD AND PENSION DIVISION.

The number of new official demands upon this division during the fiscal year for information as to the cause of death in the case of deceased soldiers and the hospital record of invalids was 22,339. Of these, 19,427 were from the Commissioner of Pensions, 2,498 from the Adjutant-General of the Army, and 414 from miscellaneous sources. The total number of new cases was greater by 1,265 than the number received during the previous fiscal year, and greater by 1,954 than the average number of new cases received annually during the nine previous fiscal years.

But, in addition to this large number of new cases, the division was burdened at the commencement of the fiscal year by the arrears of former years, amounting in all on the 1st day of July, 1878, to 16,844 cases, so that the total number of cases to be searched during the year was 39,183.

In my last annual report I explained in detail that the number of cases in arrears had, previous to July 1, 1878, been still larger; but with the additional clerical force which commenced work May 18, 1878, the task of disposing of these arrears had already commenced, and was progressing in a satisfactory manner. During the fiscal year closing June 30, 1879, the same favorable condition of the business of the office continued. Search was made and replies furnished to the proper authorities in 35,183 cases, viz: 30,637 to the Commissioner of Pensions, 4,100 to the Adjutant-General of the Army, and 446 to miscellaneous inquirers. On the 1st of July, 1879, the number of cases remaining on hand unanswered had been reduced to 4,000.

After the 1st of July the work of disposing of the cases in arrears still continued, and by the 26th of the month, notwithstanding the continual receipt of an increasing number of new inquiries, the number of cases remaining on hand unanswered had been reduced to 2,744; so that, had the rate at which new cases were received at the office continued no greater than during the last year, all arrears would have been disposed of in the course of about two months more.

But, since the 1st of July, 1879, a great increase in the number of new cases received has taken place. The average number of new cases, which had been 1,862 monthly during the previous fiscal year, rose during July, 1879, to 2,045, and during the month of August to 4,255. As a consequence, and notwithstanding every effort of which the present clerical force is capable, the number of cases in arrears has rapidly increased. By the 1st of September, 1879, it was 4,651 cases.

This sudden increase in the number of new cases sent to this office is consequent upon the operation of the act of Congress approved January 25, 1879, granting arrears of pensions, &c.,* and especially the op-

* Statutes of the United States of America, passed at the third session of the Forty-fifth Congress, 1878-79, chap. 23, p. 265.

an strength of the Army was 23,663 men. One hundred and seventeen deaths were occasioned by wounds received in action or other violent causes, a proportion of 4.9 per 1,000 of the mean strength.

During the fiscal year ending June 30, 1879, 3,340 official reports were received from medical officers in charge of post hospitals, or with detachments of troops, or with expeditions against hostile Indians. One thousand eight hundred and seventy-nine were regular quarterly reports, 12 were special reports, 12 were reports of casualties, and 1,277 were reports of a miscellaneous character.

Fourteen reports of engagements between Indians and United States troops were received in this division of the office during the fiscal year ending June 30, 1879:

1. A fight between a band of Indians, 400 in number, and a portion of General Howard's command, consisting of Companies A, E, F, G, H, K, and L, of the First Cavalry, took place near Olcut's farm, Oregon, on July 8, 1878. Assistant Surgeon J. A. Fitzgerald, U. S. A., reported that a sergeant and four privates were wounded; one of the latter died the following day, July 9, 1878.

2. Assistant Surgeon D. Weisel, U. S. A., reported that in a skirmish on July 13, 1878, between Umatilla Indians and Captain Miles's command of portions of the Fourth Artillery, First Cavalry and Twenty-first Infantry, near Umatilla Agency, Oregon, a corporal of the Twenty-first Infantry and a corporal of the First Cavalry were wounded.

3. Asst. Surg. J. A. Fitzgerald, U. S. A., reported an engagement at a cañon of the North Fork of John Day's River, Oregon, on July 20, 1878, in which a private of Company E, First Cavalry, received a shot through the scalp.

4. On September 4, 1878, a fight occurred between a party of hostile Apaches and a detachment of the Fifth Infantry at Bennett's Creek, Montana Territory. Acting Asst. Surg. R. G. Redd reported that Captain Andrew S. Bennett, Fifth Infantry, was instantly killed, and a private of Company G received a slight wound of the forearm. Indian scout Jack was shot through the bowels and died the same day.

5. On September 6, 1878, 80 enlisted men, 40 each from Companies G and H, Fourth Cavalry, under command of Captain Rendlebrock, Fourth Cavalry, were sent from Camp Supply, Indian Territory, in pursuit of Northern Cheyennes, who had left their reservation early in September. The command came up with the Indians at Turkey Springs, Indian Territory, on September 13, when a fight ensued, which lasted two days. Asst. Surg. T. E. Wilcox reported a corporal and two privates killed, and two privates and an Apache volunteer scout wounded.

6. Asst. Surg. W. S. Tremaine, U. S. A., reported that in a skirmish with hostile Indians, near Bear Creek, thirty-five miles from Fort Dodge, Kans., on September 18, 1878, a private of Company I, Fourth Cavalry, was severely wounded.

7. Acting Asst. Surg. T. A. Davis reported an engagement at Punished Woman's Fork of Beaver Creek, Kansas, with Cheyenne Indians, on September 27, 1878, in which Lieut. Col. William H. Lewis, Nineteenth Infantry, and two privates of the Fourth Cavalry were wounded. Lieutenant-Colonel Lewis was shot through the middle third of the right thigh, the ball completely severing the femoral artery. He died about twenty-seven hours after the reception of the injury, having been transported to within fifteen miles of Fort Wallace, Kans., and about thirty miles from the place where he was wounded.

8. On the night of January 9, 1879, about 150 Cheyenne Indian prisoners, confined at Fort Robinson, Nebr., after killing or wounding their guards, made their escape from the barracks, and succeeded in reach-

ing the bluffs, two miles distant. A detachment of the Third Cavalry, from the cantonment about a mile distant, was sent in pursuit of the Indians, and, after a series of skirmishes, the remaining Cheyennes were surrounded on January 22, in a "washout," in which all the rest were killed or captured. Asst. Surg. E. B. Moseley, who forwarded to this office an interesting and detailed account of the outbreak, reports the following casualties: During the night of January 9 to January 10, at the first revolt of the Indians at Fort Robinson, one corporal and nine privates of the Third Cavalry were wounded; two of the privates died within a few hours; a third lived until 9.30 p. m. on January 11.

9. On January 11, during the pursuit of the fleeing Indians, twenty miles from Fort Robinson, a corporal of the Third Cavalry was killed and a private and a farrier were wounded; the private died the following day.

10. On January 17, thirty miles from Fort Robinson, a private of Company H, Third Cavalry, was shot through the chest. His body fell into the hands of the savages, and was scalped, but not otherwise mutilated.

11. The last of these running fights occurred on January 22, forty miles from Fort Robinson. A sergeant, a farrier, and two privates of the Third Cavalry were killed, and two sergeants and Capt. H. W. Wessels, jr., of the Third Cavalry, and an Indian scout were wounded.

12. Acting Asst. Surg. R. G. Redd reported that on April 5, 1879, at Mizpah Creek, Montana Territory, a private of Company E, Second Cavalry, and a sergeant of the Signal Corps were attacked by a party of Cheyenne Indians. The private was instantly killed; the sergeant of the Signal Corps received only a slight flesh-wound.

13. Acting Asst. Surg. C. A. Sewall reported that in an engagement with Apache Indians in the Miembres Mountains, New Mexico, May 29, 1879, one private of the Ninth Cavalry was killed and two were wounded.

14. Acting Asst. Surg. C. A. Sewall reports that a farrier of the Navajo scouts was killed by Apache Indians ten miles from Ojo Caliente, N. Mex., on May 2, 1879.

At the close of the fiscal year ending June 30, 1878, 6,807 cases of injuries and operations that had occurred since the date of the publication of Circular 3, 1871, had been collected. To these have been added during the last fiscal year 1,021 cases, making a total of 7,828. Twenty-three hundred and eleven are injuries of the head, 136 of the face, 63 of the neck, 559 of the trunk, 1,402 of the upper extremities, 913 of the lower extremities; 1,604 are simple fractures, luxations, and sprains, and 840 are injuries of a miscellaneous nature.

Surgical statistics of the war.—Until June 30, 1878, 227,308 surgical cases and 40,577 operations, giving a total of 267,885 cases, had been entered on the permanent records of this division of the office. To these have been added during the year ending June 30, 1879, 1,062 surgical cases and 19 operations, giving an aggregate of 268,966 cases now collected. In 3,957 instances additional data to surgical cases were obtained from reports of pension-examiners, from surgical journals, and from correspondence with medical officers who served during the war. In 1,537 cases additional information was obtained from the Pension Office, and in 2,960 cases from the Record and Pension Division.

ARMY MEDICAL MUSEUM.

Surgical section.

Specimens in the Museum, July 1, 1878	6,874
Specimens in the Museum, July 1, 1879	6,947
Increase during the year	73

Medical section.

specimens in the Museum, July 1, 1878	1,421
specimens in the Museum, July 1, 1879	1,497
Increase during the year	76

Microscopical section.

specimens in the Museum, July 1, 1878	8,008
specimens in the Museum, July 1, 1879	8,263
Increase during the year	255

Anatomical section.

specimens in the Museum, July 1, 1878	1,948
specimens in the Museum, July 1, 1879	1,999
Increase during the year	51

Section of comparative anatomy.

specimens in the Museum, July 1, 1878	2,164
specimens in the Museum, July 1, 1879	2,241
Increase during the year	77

Miscellaneous section.

specimens in the Museum, July 1, 1878	657
received, 510—transferred, 556	46
specimens in the Museum, July 1, 1879	611

The contributors to the Army Medical Museum were 7 surgeons, 28 assistant surgeons, 13 acting assistant surgeons, 5 hospital stewards, 50 officers, 35 civil practitioners, and 7 other civilians.

Thirty-six thousand and twenty-one visitors registered at the Army Medical Museum during the year. One hundred and seventy-eight negatives and 1,856 photographic prints of surgical subjects were made. One hundred and twenty-six photographic prints were distributed among medical colleges and contributors to the Army Medical Museum and Library.

MEDICAL AND SURGICAL HISTORY OF THE WAR.

During the fiscal year the work on the second medical volume of the Medical and Surgical History of the War steadily progressed under the direction of Surgeon J. J. Woodward, the officer in charge of the work, and the stereotype plates of the text were completed during the month of March, 1879. Copious indexes were subsequently prepared, and the work having been put to press, both the issues authorized by the law have been printed, and will be laid before Congress so soon as it assembles. This volume completes Part II of the Medical and Surgical History of the War.

The medical and surgical volumes of Part III, which will complete the whole work, are both under way. The final arrangement for the printer of the materials for the third medical volume has been commenced, and most of the illustrations required are already prepared. The work on a third surgical volume is still further advanced, under the direction of Assistant Surgeon George A. Otis, U. S. A. During the year the proofreading of 100 pages, from page 101 to page 200 (inclusive), has been completed, and 105 drawings on wood and 101 wood engravings have been made for this volume.

PROPERTY DIVISION.

The following is a summary statement of the work performed in the Property Division of this office during the fiscal year ending June 30, 1879:

Letters received and recorded.....	4,219
Letters sent and recorded.....	2,071
Indorsements sent and recorded	494
Claims and accounts examined, settled, forwarded, or referred	586
Accounts current examined and forwarded to the Treasury.....	89
Vouchers and subvouchers pertaining to accounts current examined	2,418
Statements of funds received and forwarded	272
Accounts of sales of condemned property, with vouchers, settled and forwarded.	81
Property returns examined and settled	494
Property returns examined and suspended.....	40
Miscellaneous notifications and certificates issued.....	1,430
Aggregate	12,194

LIBRARY.

About 3,000 volumes and 3,500 pamphlets have been added to the library during the past year, making the total number about 49,000 volumes, and 53,500 pamphlets.

The first part of the Index Catalogue has been sent to press, an appropriation having been granted by Congress at its last session for printing the first two volumes.

MISCELLANEOUS.

The requirements of the Army as to medical officers during the past year have been as follows:

Number of permanent posts.....	151
Number of temporary posts and substations	22
Total	173
Number of military expeditions in the field during the year	32

These expeditions required the services of 41 medical officers. There were also 60 medical officers reported to this office as having been on duty with scouting parties.

The Army Medical Examining Board convened in New York City on the 7th of November, 1877, for the examination of assistant surgeons for promotion, and of candidates for appointment in the Medical Corps of the Army, has been continued in session throughout the year. Since rendering my last report six candidates for appointment have been found qualified and approved by the board, four of whom, together with the two who had been approved, but whose names had not been submitted for appointment at date of my last report, have been appointed and commissioned assistant surgeons; the names of two have not yet been submitted for appointment. The approved candidate, whose confirmation previously failed in the Senate, has been confirmed and commissioned assistant surgeon.

The following is a recapitulation of the work thus far performed by the Army Medical Examining Board:

Number of assistant surgeons examined for promotion	25
Number of candidates for appointment in the Medical Corps invited to appear for examination	130
Number of candidates found qualified	13
Number of candidates rejected	27
Number of candidates who withdrew after partial examination.....	52
Total number examined	92

PAPERS ACCOMPANYING THE

er of candidates who failed to appear for examination.....	13
er of candidates who declined to appear for examination	8
er of candidates remaining to be examined.....	17
<hr/>	
Total number invited but not examined	38
* * * * *	

the present time there are 13 medical officers on sick leave of absence, of whom 8 have been found incapacitated for active service and been recommended for retirement by Army retiring boards; 6 are on ordinary leave of absence, after a tour of duty on the remote front—leaving 154 medical officers for duty.

J. K. BARNES,
Surgeon-General, U. S. Army.

to the Hon. SECRETARY OF WAR.

REPORT OF THE PAYMASTER-GENERAL.

WAR DEPARTMENT,
PAYMASTER-GENERAL'S OFFICE,
Washington, D. C., October 10, 1879.

SIR: I have the honor to submit my annual report of the transactions of the Pay Department for the fiscal year ending June 30, 1879. I append tabular statements in detail showing the fiscal operations of the department for that year, concisely stated as follows:

RECEIPTS AND DISBURSEMENTS DURING THE FISCAL YEAR ENDING JUNE 30, 1879.

Balance in hands of paymasters, July 1, 1878.....	\$1,523,739 78
Amount received from Treasury.....	12,830,738 83
Amount of Maj. G. G. Hunt, late disbursing officer Freedman's Bureau.....	101,708 37
Amount of soldiers' deposits.....	370,770 33
Amount of paymasters' collections.....	486,238 67

Total to be accounted for..... 15,318,196 08

Accounted for as follows:

Disbursements:	
to Regular Army.....	\$12,000,950 94
to Military Academy.....	206,872 79
to volunteers, claims of freedmen, &c., on Treasury certificates.....	325,728 69

Total disbursements.....	12,532,852 41
Surplus funds deposited in Treasury.....	439,799 94
Paymasters' collections deposited in Treasury.....	486,238 67
Balance in hands of paymasters June 30, 1879, to be accounted for in next report.....	1,859,306 06

Total accounted for..... 15,318,196 08

I have again to recommend legislation to rescind so much of the second section of the act of July 24, 1876, as forbids payment of mileage for travel on any railroad on which troops of the United States are entitled to be transported free of charge." I would respectfully submit that an army traveling without troops is not in any position to execute or carry out any policy towards these railroads. This can only be efficiently done by the Quartermaster's Department, in providing for the transportation of troops. Mileage is a substitute for payment of actual expenses to an officer traveling, without troops, under orders. The

latter system reimbursed to an officer more than the bare railroad or stage fare, and gave him, under certain limitations, repayment of hotel expenses. Thus when mileage is denied to officers traveling over certain roads, more is accomplished, by this mulcting of the officer, than to cause the roads "to transport the troops and property of the United States free of all cost, charge or expense to the United States." Also the officer to make use of the privilege of free transportation over such road must obtain transportation orders in advance from the quartermaster. This could avail him if his travel was only over that road; but in purchasing in advance through-tickets over long routes (having free roads on portions of the line) the railroad offices will allow nothing for such transportation orders. Thus the officer in practice not only forfeits mileage over such road, but cannot really avail himself of free passage over it. I present these points of hardship, notwithstanding the reduction, by a recent decision of the Second Comptroller, of the number of such roads to nine, as announced in General Orders No. 58, of 1879. The anomaly remains on the statute-book and should be repealed.

In renewing my recommendation for the enactment by Congress of the *annuity scheme*, it is natural to recur to the number of officers who have been killed in battle with the Indians during the last twelve months, and to the language of your annual report of November 19, 1877, which said "the deaths of officers on the frontier in recent campaigns against the hostile Indians bring forcibly before us the necessity of encouraging and enabling officers, by their own regular and voluntary assessment, to provide an annuity for those who are dependent upon them for support."

A former member of Congress (not a member of the present Congress) once said to me, "If this scheme becomes a law, on the eve of a great war a large number of officers will join, which, after very numerous casualties in battle, will bring heavy payments on the Treasury." I replied, "The more the better. That is just what we would wish. For, 1st, the larger the number who join, the more surely the statistics will, in the long run, be made good, and the government be secure from loss; and, 2d, it is for a state of war we especially recommend this scheme, when the widow and the orphans would have been, to some extent, provided for by the forethought of the officer."

Major-General Hancock in a report of October 19, 1876, strongly advocates the annuity scheme, and quotes the very pertinent recommendations of Lewis Cass, when Secretary of War, in his annual report of November 29, 1833, and of Joel R. Poinsett in 1837. The former said:

A moderate and stated deduction from the pay of each officer would create a fund which would afford essential relief to many who otherwise would be exposed to want and penury, and might soothe the declining years of meritorious officers, who may have necessarily expended in the maintenance of their families the whole allowance made to them by law, and who, without such an arrangement, would look forward with anxiety to the future.

Mr. Poinsett said:

I beg leave to reiterate that which proposes some legal organization for the purpose of establishing a fund for the support of invalid officers, and the widow and children of such of them as may die in the service. This may be done by making a moderate reduction from their pay to such an amount and in such manner as may be agreed upon by the officers themselves.

There appears to be a large number of the most experienced officers in favor of an increase of the pay of the sergeant-majors and quartermaster-sergeants of regiments, and of first sergeants of companies. In my annual report of October, 1876, I concurred in recommending such increase, proposed in a bill, H. R. 2936, of that Congress. Since that date,

experienced colonels, such as Col. H. J. Hunt, of Fifth Artillery, and Col. B. Willcox, of Twelfth Infantry, have made such recommendations. The latter goes so far as to urge \$50 per month for sergeant-majors and quartermaster-sergeants, and \$45 per month to first sergeants.*

Colonel Willcox now commands the Department of Arizona, and his experience forces on me the conviction that the President should, by legislation, be given the power to direct, in special cases whenever he thinks proper, payment of an officer according to his brevet rank. This would be particularly proper for an officer commanding a department or an army in the field. The law now forbids any payment for brevet rank. The legislation of 1869 concerning brevets is very wise, and should have been adopted a half century ago. It limits the power to confer commissions by brevet to "time of war and for distinguished conduct in public service in the presence of the enemy"; and the special assignment by the President is necessary to entitle an officer to command under a brevet. All governments should have the power to reward and regulate distinguished conduct in the field, and if, on special occasions, a brevet shall also bring pay, the honor conferred would be the more real and substantial.

The number of deposits made by enlisted men, under the act of May 1872 (sec. 1305, R. S.), during the last fiscal year was 6,807, amounting to \$370,770.38; during the previous year the number was 5,524. This is a considerable increase in the number, but the average of the amount of each deposit is less.

The following is a tabular statement of amount deposited and amount paid during the last seven fiscal years:

	DEPOSITED.			REPAID.		
	Number of deposits.	Amount of deposits.	Average of deposits.	Number of deposits repaid.	Amount of deposits repaid.	Amount of interest paid.
1st year ending June 30, 1873	2,217	\$209,850 38	\$94 65	52	\$6,688 59	\$71 00
2d year ending June 30, 1874	4,971	348,609 58	69 72	111	55,316 25	1,685 15
3d year ending June 30, 1875	5,105	825,255 80	63 71	2,880	202,608 94	13,230 84
4th year ending June 30, 1876	14,252	435,912 68	30 58	7,408	320,856 01	15,509 44
5th year ending June 30, 1877	5,651	328,585 05	58 15	8,440	358,559 95	20,466 93
6th year ending June 30, 1878	5,524	346,243 94	62 68	9,182	145,067 91	8,420 24
7th year ending June 30, 1879	6,807	370,770 38	54 47	4,926	257,854 48	17,708 93
Totals	44,527	2,363,227 79	53 74	28,497	1,443,012 13	77,159 53

This large number of deposits in the fiscal year ending June 30, 1876, was exceptional, and due to non-appropriation for half of June in that year.

The number of desertions in the Army during the last fiscal year was 65; in the previous year 1,672. This increase we will hope is temporary. The number in the cavalry was 662 against 776 during the previous year; the number in the infantry was 937 against 608 in the previous year, showing an unaccountable increase of the number of desertions in that branch of the service.

BOUNTIES, ETC., DUE COLORED SOLDIERS.

The second section of the sundry civil appropriation act of March 3, '9 (published in General Orders No. 42, of 1879), provided—

That all sums due upon certificates issued or which may be issued by the account-officers of the Treasury in settlement of claims for pay, bounty, prize-money, or

Brevet Maj. Gen. W. Merritt, colonel of Fifth Cavalry, in October number of the *United Service Magazine*, recommends "seventy-five dollars a month for non-commissioned staff officers and first sergeants of companies," and duty sergeants from forty to fifty dollars a month.

other moneys due to colored soldiers, sailors, or marines, or their legal representatives, shall be paid by the officers of the Pay Department of the Army, under the direction of the Paymaster-General, who is already charged with the payment of like dues to white soldiers.

By the act of June 10, 1872 (Statutes 17, p. 336), the Bureau of Refugees, Freedmen and Abandoned Lands was discontinued from the 30th June, 1872, and "all acts or parts of acts pertaining to the collection and payment of bounties or other moneys due to colored soldiers, sailors, or marines, or their heirs," were thereafter to be carried into effect by the Secretary of War. Under this act, said duty, by the direction of the War Department, was devolved upon what was called "the Freedman's Branch of the Adjutant-General's Office."

Under the act of March 3, 1879, I designated, under instructions to him dated March 8, 1879, Major A. B. Carey, paymaster, to take charge of said duties in this department. He had already for some time been charged with the payment of like dues to white soldiers paid on Treasury certificates. The records, papers, &c., were transferred by May 5, 1879, to Maj. Carey, by Maj. G. G. Hunt, chief disbursing officer, Freedman's Branch of Adjutant-General's Office, and \$100,708.37, funds for payment of said claims.

The great object sought has been the payment of the moneys due (not a mere check) to the identical colored soldier or his heirs, for experience had shown that they were peculiarly liable to imposition and fraud. Hence the original legislation on this subject (vol. 15, p. 26, of Statutes) in the joint resolution of March 29, 1867. All the precautions enjoined in that act are still in force; and the recent act of March 3, 1879, recognizes the method of "postage and post-office money-orders," which had been previously practiced by authority of the Secretary of War. The Post-Office Department has carefully and efficiently co-operated with this office in the discharge of this duty.

Respectfully submitted.

BENJ. ALVORD,
Paymaster-General, U. S. A.

To the Hon. the SECRETARY OF WAR.

REPORT OF THE CHIEF OF ORDNANCE.

WAR DEPARTMENT, ORDNANCE OFFICE,
Washington, October 20, 1879.

The Hon. SECRETARY OF WAR:

SIR: I have the honor to submit the following report of the principal operations of the Ordnance Department during the fiscal year ended June 30, 1879, with such remarks and recommendations as the interests of this branch of the military service seem to require.

Under the various laws of the United States, the Ordnance Department provides arms and munitions of war for the whole military establishment, and has charge of the armories, arsenals, and other ordnance establishments for their manufacture, repairs, and storage. Thus at the present time the department is providing ordnance and ordnance stores for the sea-coast fortifications, the whole body of the militia, the Military Academy, and the Artillery School, and the Regular Army, in the military establishment, and to the Treasury, Post-Office, and Interior De-

departments, and the Fish Commission, the Marine Corps, and the thirty colleges authorized by section 1225 Revised Statutes. In addition to this work it is charged with other important duties in connection therewith not now necessary to enumerate.

The fiscal resources and expenditures of the department during the year were as follows, viz:

Amount in the Treasury to the credit of appropriations on June 30, 1878	\$100,402 96
Amount in the Treasury not reported to the credit of appropriations on June 30, 1878	19,034 95
Amount in government depositories to the credit of disbursing officers and others on June 30, 1878.....	161,134 72
Amount of appropriations for the service of the fiscal year ended June 30, 1879	1,410,054 41
Amount refunded to ordnance appropriations in settling accounts during the fiscal year ended June 30, 1879	27,304 40
Amount received during the fiscal year ended June 30, 1879, from sales to officers; from rents; from collections from troops on account of losses of, or damage to, ordnance stores; from Chicago, Rock Island, and Pacific Railroad Company; from exchange of powder; from sales of condemned stores; and from all other sources not before mentioned	74,638 30
Total	1,792,659 74

Amount of expenditures during the fiscal year ended June 30, 1879, including expenses attending sales of condemned stores, exchange of powder, &c.....	\$1,443,998 74
Amount deposited in the Treasury during the fiscal year ended June 30, 1879, as proceeds of sales of government property	9,144 71
Amount lapsed in the Treasury from the appropriation "Ordnance material," under act of March 3, 1875, during the fiscal year ended June 30, 1879	203 00
Amount transferred from ordnance appropriations in settling accounts during the fiscal year ended June 30, 1879.....	394 09
Amount turned in to the "surplus fund" on June 30, 1878, and June 30, 1879	33,149 87
Amount in government depositories to the credit of disbursing officers and others on June 30, 1879.....	77,845 25
Amount in the Treasury not reported to the credit of appropriations on June 30, 1879.....	3,075 63
Amount in the Treasury to the credit of appropriations on June 30, 1879	224,848 45
Total.....	1,792,659 74

STATIONS AND DUTIES.

With few exceptions, the stations and duties of the officers remain the same as reported last year, viz: Two at the Ordnance Office; thirty-four at the arsenals, armory, and powder depots; eight at the ordnance agency, on the Ordnance Board and at the foundries; seven at the different military headquarters and ordnance depots; four at the Military Academy; two under the orders of the honorable Secretary of the Interior, and two on leave of absence (sick). Captains C. E. Dutton and Pitman have, on application of the Secretary of the Interior, been detailed for duty in that department, and Lieutenant Lyle still continues on duty in the Life-Saving Service under the Secretary of the Treasury. Under the operations of existing laws, four officers have been transferred to the department from the line of the Army, after passing satisfactory examinations preliminary thereto.

During the past year death has taken one of our most meritorious officers—Lieutenant-Colonel Treadwell. His abilities of no common order,

and to services highly distinguished, he added a pure record and a kindly nature, and his loss is deplored by the entire department.

All of the officers of the department have been busily engaged on the important duties devolved upon them by law, and the results of some of their labors are shown in the many interesting and valuable papers appended.

I append a roster of the corps, with the stations and duties of each officer.

ARSENALS, ARMORIES, AND DEPOTS.

The various duties at our ordnance establishments have been performed in a most satisfactory way, and the moneys appropriated for repairs and improvements have, it is believed, been expended in an economical and judicious manner, yet in most instances the money available has been of so small an amount as to preclude anything but the most minor work. I have estimated for the next fiscal year for sums which I consider should be granted to enable me to properly preserve and protect the large public property under the control of the department.

By a reference to the report of the operations carried on at the Rock Island Arsenal it will be seen that the construction of the new buildings has progressed in a satisfactory manner, and with the aid of the new appropriations asked for, the workshops will soon be in a condition to receive their machinery and commence manufacturing to meet the future wants of the country.

The ordnance depots have met the expectations of this office, and have proven to be of great convenience in speedily supplying the troops serving in the field against the hostile Indians. Ample supplies have been collected and placed under the immediate control of the military commanders interested, and by them have been distributed to their commands as occasion has demanded.

An officer of the department is now engaged in examining the various sites offered for the establishment of the new powder depot on the Atlantic coast, and it is presumed that he will soon be able to recommend a suitable location, when steps will be taken to secure sufficient land for the erection of the proper magazines and other buildings for the storage and handling of powder.

I beg to ask the especial attention of the Secretary of War to my estimate for continuing the boring of the artesian well at the Benicia Arsenal to a depth sufficient to determine whether a good supply of palatable water can be procured. The well has now reached a depth of 1,407 feet, and it is thought proper to carry it down 600 feet more. A perusal of the interesting report of the commanding officer of that arsenal (Appendix L) will show what difficulties have been encountered and overcome so far, and what may be expected in the future progress of the work. The many artesian wells on the Pacific coast have been of a depth only sufficient to reach surface water, which is neither constant in quantity nor sufficient in supply. Whether at a depth such as has been reached in other quarters of the globe a full, constant supply can be obtained, is a matter that deeply concerns the manufacturing and agricultural interests of the Pacific coast, and I trust that it will be deemed of sufficient importance to strongly recommend to Congress the desirability of a proper appropriation to demonstrate its success or failure.

A recent official visit to the Benicia Arsenal has impressed me most forcibly with the wants of that national establishment, and the pressing necessity of enlarging and perfecting its manufacturing and storing facili-

Under the careful, economical, and intelligent command of Lieutenant-Colonel McAllister the arsenal has been established on a satisfactory basis, reflecting great credit on his executive and administrative capacity and professional attainments. The constantly increasing wants of the Pacific coast demand the fostering care on the part of Congress of this, the only manufacturing establishment owned by the United States in that region. I earnestly recommend liberal appropriations for this arsenal.

I have renewed my estimate for an appropriation to purchase a small tract of land adjoining the San Antonio Arsenal. It is absolutely indispensable for the security of the arsenal buildings and the public property stored therein that the government should own this property. Its proximity to the frontier may some day require an increase to its capacity, and this additional ground will be absolutely necessary. Its purchase has been often recommended, and the recommendation has always received a favorable hearing in the Congress, but so far, from some cause, the necessary funds have not been appropriated. Executive Document No. 48, House of Representatives, Forty-second Congress, third session, fully explains the necessity of its early acquirement.

Since my last report, the erection of a building at the proving ground Sandy Hook, N. J., has been nearly completed, and it is now occupied for the purpose intended, giving good accommodations for the officers and others interested in the important labors at all times in progress. During the present fiscal year the quarters authorized for the superintendent of the grounds will be completed, and the work of grading and leveling the grounds, so far as the limited appropriation will permit, will be carried on. To make the proving ground what it should be requires additional facilities for the storage of powder and other ordnance property, and for the accommodation of the force of mechanics and laborers at all times employed there, and to meet those requirements I have asked for certain sums of money to be expended during the next fiscal year, the detailed necessity for which is set forth in the Book of Estimates, and to which I beg to refer.

ARMAMENT OF FORTIFICATIONS.

An estimate of \$950,000 for this purpose has been submitted for the next fiscal year. The limited appropriations for the year 1878-'79 for West-coast armament have been mainly used in the conversion of 10-inch smooth-bores into 8-inch rifles, and the provision of carriages for the same, and existing contracts are now rapidly approaching completion. In my report of 1878, I stated that—

There are but two manufacturing establishments in the country having the facilities and experience necessary for the conversion of guns on the plan adopted. These are the West Point Foundry, Cold Spring, New York, and the South Boston Foundry, Massachusetts, both of which have done foundry work for the government since the commencement of the century. As in all probability we will have to depend on these establishments in the future, the department ought to be in condition to keep them in efficient orders to preserve the plant and mechanical skill without loss to the country.

And added—

respective, however, of any consideration of persons or profit the present urgent wants of our forts for armament, and the impossibility of supplying it except by a slow and careful process incompatible with the rush of events in impending war, the economy working at present prices, besides giving the idle mechanic the privilege of labor for his bread, all appeal to Congress for a large permanent annual appropriation to meet this national necessity.

In my report of 1876 I alluded to the decided advantages to be derived from the use of breech-loading rifles, especially in casemated works. Since then the unfortunate disaster on board of the "Thunderer" (the bursting of a 38-ton M. L. gun by the accidental insertion of two charges—impossible to occur in breech-loaders) and the unexcelled results (in power, accuracy, and successful manipulation) recently obtained at Meppen by Herr Krupp in the trials of his breech-loading guns of 70 and 18 tons, have led to the conviction that it is highly probable that the general introduction of breech-loading instead of muzzle-loading cannon in the armaments of Europe—for all heavy ordnance especially—is a mere matter of time. In fact, the high charges now employed—requiring long and large chambers, and, as a sequence to their use, great lengths of bores, so increases the cumbersomeness and inconveniences of the loading apparatus required for muzzle-loaders besides resulting in exposure to personnel and materiel) that it is believed it will be decidedly difficult, if not almost impracticable, to operate muzzle-loaders constructed after the more recent models with desirable convenience and safety.

These facts have not been lost on the department, and plans are now in its possession looking to the prompt application of the principles of chambering and breech-loading to our present guns, and to new constructions, whenever favorable action on the part of Congress will enable us to undertake the introduction into our service of these recent and most important and decided improvements.

Chambered rifles.—The decided advantages resulting from the introduction of chambers, with increased lengths of bores, for the employment of heavy charges, have been demonstrated by testing a 3-inch rifle chambered and lengthened.

This gun was selected, as it enabled the department, in a prompt and inexpensive manner, to test these novel features. The results, as shown by the record, were highly satisfactory, and equaling those obtained abroad. An initial velocity of 2,025 feet was reached by the use of 5 pounds 13 ounces of powder with 10.5 pound projectile, the pressures only being 30,000 pounds per square inch.

The highest velocity yet attained with the ordinary 3-inch rifle is, with the highest charge practicable, 3 pounds of powder with 10.5 pound projectile, 1,558 feet, with a pressure of 36,333 pounds per square inch.

The importance of changing our rifling to a more rapid twist, if found by experiments to be practicable, has been recognized for some time by the department, and a 3-inch rifle with a shorter twist than found in the service gun has been prepared and is now under trial with varying weights and lengths of projectiles.

It is believed that the results will be valuable in practically demonstrating the increased capacity and power from the use of a shorter twist, and that they will show the advisability of using a more rapid twist in our heavy calibers.

Breech-loading field rifle.—A wrought-iron field gun was, on plans recommended by Lieutenant-Colonel Crispin, constructor of ordnance, converted, at small expense, into a breech-loading rifle. The results of a trial have been very satisfactory, and the Ordnance Board recommends that a battery of these be made for issue to the service for competitive trials with the muzzle-loaders. As this experiment can be made at trifling expense by converting guns on hand, and enable us to get an expression of opinion from artillery officers as to the relative merits of muzzle and breech-loaders for service, the recommendation, if it

meets your approval, will be carried out at the earliest practicable moment.

Powder tests.—During the past year tests have been made of a variety of samples of experimental powders for the 11-inch, 8-inch, 4.5-inch, and 3-inch rifles, and the results obtained are summarized and appended to the firing records of those several guns.

These experiments, though not yet completed, undoubtedly indicate progress in the right direction; and it is confidently believed that ere long we will be enabled to procure powders which will give in these several guns about the initial velocity desired, with moderate and safe pressures. In this connection, it may be said that great credit is due Messrs. Du Pont & Co. for the intelligent manner in which they have interpreted the results of the experiments and promptly met the wants of the department in furnishing samples.

Experimental guns.—Under the act of Congress approved June 6, 1872, appropriating funds for the procurement and tests of experimental rifled ordnance of heavy calibers (to be selected by a board of officers of the United States Army to be appointed by the honorable Secretary of War), the department, under the authority of law, has procured, amongst others, several guns which are now on hand at the proving-ground at Sandy Hook awaiting trial. These guns are the Woodbridge 10-inch rifle, the Thompson 12-inch breech-loading rifle, the Sutcliffe 9-inch breech-loading rifle, the Lyman multicharge gun, and the Mann 8-inch breech-loading rifle.

The Woodbridge gun has been fired ten rounds; the Thompson two rounds; the Sutcliffe twenty-six rounds; the Mann eleven rounds, and the Multicharge gun three rounds.

The extent of the tests so far made are meager in the extreme, and no evidence of any special importance of the merits of any one of these experimental guns has consequently been obtained. They have been in the possession of the department, awaiting trial, for three or four years, but want of funds to undertake what may be regarded as a suitable proof has prevented the prosecution of the work. They were selected by a board of officers after careful investigation as to their presumed merits as systems of construction (both breech and muzzle-loaders), and have been procured at considerable expense to the government.

In view of the facts that they were provided for experiments and tests, and that none have so far been made to any extent, and, in view of the developments to be expected regarding the numerous questions involved in gun constructions, both muzzle-loading and breech-loading, the interesting and important developments to be made in the furtherance of the solution of the ballistics questions now occupying the attention of the civilized world, and improvements to be developed in powders, projectiles, and systems of rifling, &c., some measures looking to the trial of these guns, and as contemplated by law of June 6, 1872, and to fully test these different inventions (recommended by the board organized under the act), should be instituted by the department. I have accordingly estimated for \$117,600, which, if appropriated, will enable me to have the merits of these different systems fully determined.

Machine guns.—The only tests under this head during the current year have been those incident to the trial of a flank defense carriage adapted for the service of the flank defense Hotchkiss revolving cannon.

The necessity of a practical carriage for use with this gun was apparent to the department, and a carriage devised by the constructor of ordnance has been tested with satisfactory results, and recommended for adoption by the Ordnance Board.

MILITIA.

Under the Constitution, "Congress shall have power"—

To provide for calling forth the militia to execute the laws of the Union, suppress insurrections and repel invasions.

To provide for organizing, arming, and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States, respectively, the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress.

To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all other powers vested by this Constitution in the Government of the United States, or in any department or officer thereof.

No State shall, without the consent of Congress, * * * keep troops, or ships of war in time of peace, * * * or engage in war, unless actually invaded, or in such imminent danger as will not admit of delay.

For many years there has been a growing feeling throughout the country in favor of a reorganization of our militia system. To perfect our present organization, or to improve it by alteration, requires the action of Congress. That Congress has full power to provide for *organizing* the militia in time of peace, under the above-quoted provisions of the Constitution, there can be no doubt, and Congress has exercised this power in the obsolete and meager laws now on our statute-books; but there has been no practical means provided for enforcing obedience to these laws. Everything is left to the discretion of the individual States. A few of the States have small but well-regulated bodies of troops, while others have none, or, if any, undisciplined, ununiformed and indifferently equipped. It seems to me that the time has come when the subject of raising, arming, and equipping, disciplining, and keeping in readiness for service a part of our militia, should receive the thoughtful attention of Congress.

That a portion of the militia should in a sense be mobilized requires no argument, and this active portion should be distributed equally throughout the country according to population.

By establishing the principle by legal enactment, that Congress will help only those who help themselves, and providing that arms and equipments will not be issued to a State except in proportion to its properly enrolled and organized active militia, and that a per diem for camp services shall be paid to those individuals only who are present in camp, and only for the days that they are present and actually employed, the States and people may be brought to a realizing sense of the necessity for prompt and permanent action in a matter so vital to the military power of the nation. The general government, under the law of 1808, now supplies arms and equipments to the militia of the States, and there is no reason why their issue should not be made dependent on acts to be performed by the States, such as the organization and discipline of a certain portion of the militia.

I have, therefore, to recommend that provision be made by law for organizing, arming, and disciplining a militia force of two hundred thousand men, distributed among the States in the proportion of about seven hundred men to each Congressional district and Territory, and the District of Columbia.

To make this practicable will require large annual appropriations, appropriations that must be permanent, at least for a few years, to give trial to the scheme.

In the first place, there should be an annual appropriation of \$1,000,000 for arms and equipments, which would give about \$3,000 for the troops in each Congressional district. The necessity for this increase of the annual appropriation for arming and equipping the militia is so well

understood and appreciated, has been so often referred to at length in official reports from this office and the War Department, that no lengthy discussion is called for.

The aggregate strength of the militia of the United States, as taken from the last Army Register, is as follows:

Organized.....	113,873
Unorganized.....	3,822,114

and only \$200,000 is annually appropriated for their arms and equipments. With our small standing army, the country must recruit its fighting force from the people on the instant upon the breaking out of war. The soldiers who fought our recent battles will soon pass from the scene, or become too old for active service, and most of the experience of the war will be lost to the country, with the actors in their graves. Half a generation has passed away since the close of that mighty struggle. In a very few years dependence will have to be placed on the raw recruit; and while the experience of the bivouac and battle cannot be acquired in peace and in the quiet avocations of ordinary life, much can be effected by placing in the hands of the young men the arms they may have to use in war, and encouraging that military spirit which alone can make material for soldiers. The distribution of arms to the militia is a vital element in this regard, and the want of a large standing army must be compensated by a well-organized, well-armed, and well-disciplined militia.

In the second place, there should be an annual appropriation of \$1,000,000 for the expenses of an annual encampment—the payment to each militiaman a per diem for each day's service while actually in camp, &c. In this manner the benefits to be derived from this appropriation would be strictly confined to those States and to those individuals complying with the requirements of the general government.

The laws upon our statute-books need a thorough revision, after a calm and most careful consideration of all the various elements that enter as factors. The supervision and control to be exercised by the general government must be fully and definitely set forth, as definitely and concisely for a time of peace as for a time of war, and this degree of supervision once determined should be fixed by such enactments as will secure the most beneficial results to the United States, the States, and the militiamen. All are interested in this, in different degrees, perhaps, but none more so than the citizen, who may, at a moment's notice, be called upon to assume the functions of a soldier. I may be pardoned for suggesting, in a few general remarks, what I consider primarily necessary legislation.

1st. A permanent annual appropriation of one million dollars for arming and equipping the militia, organized as proposed.

2d. A permanent annual appropriation of four million dollars for a per diem of one dollar per man per day, for every day he is present and on duty at the encampment. The encampment to continue twenty days in each year.

3d. The militia should be armed and provided with the same munitions of war as is the Regular Army, so far as the stores furnished by the United States are concerned. The necessity of this is obvious to all, but to none more so than to the veterans of the late war on both sides. It should be understood by the States and the militiamen that the arms and equipments furnished to them do not cease to be the property of the United States, and they should be properly accounted for to the Chief of Ordnance U. S. Army in a manner similar to that in vogue in the

gular Army; and, being the property of the United States, the general government should make the necessary repairs, and should withdraw them when worn out or obsolete, supplying those of later patterns, thus keeping the armament in a continual state of efficiency.

14th. There should be a well-devised system of inspection instituted and administered by the War Department, without which the efficiency of the militia establishment can never be known nor ever be improved.

To do this the most competent men should be selected as inspectors, clothed with high rank, certainly not less than that of colonel, and invested with the powers that now appertain to inspectors in the Regular Army. They should be sufficient in numbers to make an annual inspection of the militia of each State and Territory, reporting, in detail, the result to the Secretary of War, and a copy thereof to the governor of each State or Territory interested. Some of these inspectors should be taken from the Regular Army, but the majority from the competent officers of the late war who served on either side, and this corps of inspectors might well be clothed with power, under the Secretary of War, to make such general regulations as are necessary to an uniform dress, drill, and discipline throughout the whole body of our citizen soldiery.

15th. Each State should be obliged to maintain one or more suitable ranges, and perhaps to offer suitable prizes to incite a proper emulation in target practice, and there should be an officer of high rank in the militia of each State or Territory who should be in charge of such practice.

16th. When the exigencies of the regular service will permit, officers of the Regular Army should be allowed to accept commissions in the militia, without detriment to their regular commissions, upon the application of the governors, and for such times as may be determined upon.

17th. One of the most valuable means of increasing the efficiency of the militia is by the dissemination of knowledge through a military education of the youth of the country. To a certain extent this has been provided for by United States laws; but the laws, as they stand, can be improved, and a system which is undoubtedly good, so far as it goes, be made one that in a few years will furnish a large number of well-educated soldiers, capable of entering upon commands and successfully ministering them.

Section 1225 Revised Statutes, as amended by act of July 5, 1876, authorizes the issue of arms, artillery, &c., to colleges where an officer of the Regular Army has been detailed, the number not to exceed thirty.

This law calls for material modifications. There should be more permanency in the detail and in the institution that is to receive these benefits. A college that is to be provided with an officer and arms should be specially designated by the legislature of the State interested, and service at a college ought not to be optional, but be considered a military duty to which all officers are liable. Governmental supervision and inspection of these colleges as regards military training, discipline, and study, should be a condition attached to the acceptance of the liability of the general government. The providing of officers and arms makes these colleges, in a sense, a portion, and a very important portion, of the military establishment, because of the direct influence they must exercise over the efficiency of the militia, supplying, as they will from year to year, a number of competent instructors in all that is necessary to make men good soldiers.

By liberal appropriations and some such provisions of law, strictly joined and enforced, an active militia of 200,000 men could be kept in hand as a reserve force ready for any emergency, either domestic or for-

sign. While taking them from their daily avocations for a very limited period during their annual encampment, the daily allowance, though small, would partially compensate them for loss and time. It would give us a large force, supplementing our small Regular Army, always at call, and representing every portion of the country and every characteristic of our varied nationality. It would instil a military spirit throughout the country and keep alive the traditions of the past.

National Reserve.—The proper organization for an armed force in time of peace is its organization for war. A simple expansion can be readily made on the eve of a conflict, but a novel organization at such an epoch is fraught with disaster. Our experience as a nation clearly shows that, not on the militia but on our volunteers has the country depended in years of trial. Would it not be wise in any legislation for the establishment of this force to which reference is made, to break loose from the theories of the past, and empower the President in time of peace to organize a *National Reserve*, under the constitutional power “to raise and support armies,” on the plan indicated above? Should not State rights and prejudices yield to the necessities that our wars have proved to be imperative? It would be only extending into a national condition what is successfully practised in some of the States, where uniformed volunteer organizations take the place of the ordinary militia. While admitting that the subject is environed by conflicting views of constitutional questions, and by the powerful influences of sectional and individual prejudices, I am satisfied that the laws could be so framed as to guard all individual and State rights from Executive encroachments. The force could by law be localized in proportion to population, camped out for a limited period annually in their respective localities, and be paid out of the public treasury. In the interest of the public good and the public safety, the subject deserves the careful consideration of Congress.

The act approved March 3, 1875, provides that, under certain conditions, credits are to be given to the several States and Territories for the sums charged to them respectively for arms, &c., which were issued to them between January 1, 1861, and April 9, 1865, and charged against their quotas under the law for arming and equipping the militia. It is made the duty of the Secretary of War to refuse a credit “if he shall find that any of said arms or ordnance stores have been sold,” &c. At the close of the war some of the States, through inadvertence, or a wrong interpretation of the laws relating thereto, sold portions of the arms, &c., in their possession, realizing but a portion of the values charged against them on the books of this office. The arms ought not, in my opinion, to have been charged to the States on their quotas, but should have been accounted for as issues to the Army, and the loss of values should have fallen on the United States. In my opinion these charges against individual States ought to be removed, and that the spirit of the law of 1875 be extended, so as to permit credits to be given States for the difference between the prices charged and the prices realized from sale. I respectfully recommend a modification of the act of March 3, 1875, in this regard.

SMALL-ARMS.

During the last fiscal year there were manufactured at the National Armory 20,005 Springfield rifles, and under the law authorizing it, 1,000 of the experimental Hotchkiss magazine rifles. The former have been produced at a much less cost than heretofore, owing to the increased number manufactured and the improvement of the plant employed, and as there is now available a larger appropriation than usual for the present

r, it is confidently expected that the cost will yet be further reduced in the future. We had in store on July 1, 1879, only 22,073 rifles and 16 carbines at the armory and arsenals, a wretchedly small number considering the wants of the present and the calls that may be made in the future.

The Hotchkiss arms are now in the hands of the Regular Army for trial in actual service, and upon the reports to be made bi-monthly will send any recommendations for the supply to be hereafter manufactured. Whether this magazine gun is to be the arm of the future or not, it is not safe to delay providing an ample supply of the Springfield rifles, for that purpose I have asked for the next fiscal year an appropriation of \$900,000, which amount should be given in the interests of economy and for the national defense. Last year in my annual report I had honor to remark upon this matter as follows, viz :

The necessity for an accumulation of arms of the latest pattern has been so often urged, has received such practical application on the part of other countries, that a further reference to it in this report would be a work of supererogation. The moral of a large supply of arms in readiness for use is always entirely disregarded in discussion of the subject. To be prepared for immediate hostilities is a quiet power, which must enter largely as an important factor in the determination of international relations that may or may not lead to war, and, as such power, it is worth all the money expended in its production. The argument so frequently used, that the gun of to-day probably be superseded by a superior invention a few years hence, and the expense of to-day be money thrown away, might be used with equal force and pertinence respecting any article of manufacture whatever. But the present approved arm cannot be rendered worthless by the introduction of an improved weapon, because as long as breech-arms are fired from the shoulder and the propelling force is gunpowder, the caliber of gun and dimensions of cartridge, now regulation, will not be changed, and the improvement will only consist in more rapid manipulation and increased rapidity of fire. In case exactly in point, the Board on Magazine Guns has recommended a gun for trial in the hands of troops that is an improvement on the present Springfield arm only in its ability to empty its magazine of cartridges in one-half the time that the same number of shots could be fired by the latter. Used as an ordinary breech-loader, its advantages, if any, are not material or worth consideration, and yet its use as a single shot breech-loader will be its normal condition, the increased rapidity of the magazine-loading being reserved for great emergencies. Such a gun, if approved and adopted, in a few years, will not render the Springfields that may be on hand worthless. I therefore hope that Congress may be liberal in its appropriation.

And, in 1877, I said:

Believing that such a country as this, with its great natural resources, abundant wealth, exposed frontier of many thousands of miles, with a shore-line of as many thousands more, should, as a measure of ordinary safety, have always in store not less than a million of the best and most efficient arms, the manufacture of one-tenth that number during the next year seems so necessary as to call for no argument. It may be true that our policy is peace. If so now, it has been so for a century, and yet during a short period in the existence of the nation we have had not only countless wars with the Indian tribes, but wars with the nations contiguous to our boundary north and south, and the great war of the rebellion. Is it to be expected that a continuance of a peace policy will, in the present century of the country's life, be more successful in keeping us free from a fair proportion of conflicts in which peace can only be maintained at the sacrifice of men and means? The experience of the most enlightened nations in the past, the gigantic struggle now being waged on the continent, that may yet close involve other powers and subject all Europe to the horrors of war, prove far we are yet from a realization of a peace that will last longer than time enough to prepare for a new conflict. If old-established communities, with the cumulative wisdom and experience of centuries to guide them, seem to exist only under the protection of armies, is it to be expected—with a record of our wars during the past century before us—that the United States, almost the youngest in the family of nations, enjoy a future different from theirs? To be prepared for war is one of the most effective means of preserving peace. Such preparations, to be efficient and complete, must, however, be made at leisure, with all the skill, experience, and means of which we are capable. In making them, time is an element not to be ignored or despised. The progress in invention and of the mechanic arts must be consulted and kept in view in the work of preparation, because the approved articles of the past may have become

The mere stepping-stone to the perfected improvement of the present. What fifteen years ago was deemed a perfect musket is now classed as obsolete, with hardly a marketable value, and that marvel of mechanism of to-day, the breech-loading rifle, must soon make room for a still greater marvel in simplicity and effectiveness. In our preparations we must keep abreast of the progress of the age. Get the best of to-day, with the certainty that it must yield to the best of to-morrow. And it is this unceasing, ever-changing, still improving march that enforces constant and unremitting study, and labor, and change, and improvement on the part of governments the world over, that they may be thoroughly prepared in the day of trial, not with the obsolete appliances of a past age, but with the perfected mechanism of the present. This constant change of model and pattern involves all countries in great expense in fact, in never-ending drafts on their exchequers. But unless a grand council of the nations should decide and fix on the kind, character, and quality of the weapons that are to be used in war, there is but one unerring, unfailing guide to the character of an armament, and that is that it shall be equal, and if possible superior, to that of all others. This entails the constant expenditure of large sums; but such expenditures are more than repaid by the first victory that prevents the capture of a capital or the desolation of a district. At any rate, there is no way known to the world to avoid such a course of procedure, and the necessities of modern warfare demand a thoroughness and completeness in the preparations that no country can neglect.

It is in this view that a large appropriation for the manufacture of arms at the National Armory is deemed imperative. The rifle issued to the Army and the militia compares favorably with the best breech-loader either here or abroad. It is an arm that may not be superseded for many years to come, and if it be obliged to yield to one of superior merit, the effect will not be to render it obsolete, but to make it secondary to one using the same cartridge but having greater rapidity of fire, so that the present single breech-loader will always be a powerful weapon, even when compared with the possible magazine-gun of the future. We cannot be wrong in laying up a reasonable supply of these, therefore, especially as the magazine-gun that may some day be adopted for Army service may require years of invention and improvements to reach that degree of simplicity in its mechanical arrangements necessary to render it suitable for the soldier.

I can only reiterate these views, and express the hope that the wisdom of Congress will grant what we so urgently require.

TARGET PRACTICE.

I have made an estimate for the smallest amount of money which, in my judgment, will be needed to provide ammunition for the use of the service, viz, \$200,000. To make our soldiers good marksmen, an ample supply of ammunition must be provided, and this cannot be done unless sufficient money is annually appropriated.

The amount asked for will provide between 7,000,000 and 8,000,000 cartridges, and if all should be expended in target practice, it would not give each soldier over 400 cartridges for the year; certainly a very small number when the importance of the subject is considered. But, as a matter of fact, a large part of this quantity is expended for other purposes—in battle, scouting, escort duty, drills, and occasions of ceremony—so that the soldier can hardly expect to fire over 25 rounds per month. The great interest which has sprung up within the last four years in the Army in regard to target practice has not been fostered to the extent it should have been, owing to the lack of funds to procure a sufficient supply of ammunition, and perhaps a well-digested system of target practice and the necessary appliances.

By the distribution to the service of a text-book on rifle firing, prepared by your order, under my direction, by Colonel Laidley, of this department, a system has been adopted which, though undoubtedly susceptible of improvement in future, will, with the necessary appropriations for cartridges, enable the soldier to perfect himself as a marksman, and to develop to their fullest extent the many excellent qualities of the Springfield rifle.

TEST OF METALS.

The department has now in its possession, set up at the Watertown Arsenal, the finest machine in the world for testing the strength of metals and other materials, and I have asked for a small annual appropriation to enable it to be used. This machine was authorized by Congress, and constructed under the immediate supervision of the late United States Ordnance Board to test iron, steel, &c. Valuable results have already been obtained from its limited use under circumstances very unfavorable, and it is suggested that a wise policy and a just appreciation of the advantages to inure to the various industries of the country will prompt the Congress to grant the small amount of money necessary to develop its capacities.

The work already accomplished has enlisted the active sympathy of scientific men of all classes, and metal manufacturers and users, who have not limited their expressions of approval, but have supplemented them with funds to finish work which was commenced, but could not be finished owing to the failure of Congress to appropriate the wished-for money.

From what is known of the wants of officers having charge of government constructions, the lack of definite information on the part of civil engineers, architects, and mechanical engineers throughout the country, and their utter inability to obtain correct data on which to base their calculations, for the need of which large sums have annually to be expended in order that the errors made may be on the side of safety, there is no purpose for which an appropriation could be granted which would yield so large and immediate a return in the way of money absolutely saved as a grant for working this machine and publishing the results obtained, and in the correctness of this opinion I am confident that I will be supported by the whole body of scientific men and manufacturers of metals of superior quality throughout the land.

EQUIPMENT BOARD.

Upon my request a board of officers from the line of the Army was constituted by the Secretary of War to consider the subject of bayonets and intrenching tools. This board was in session nearly four months, and the result of its labors has been published to the Army. As rapidly as possible those of its recommendations which have been approved by the Secretary, and which relate to the stores provided by the Ordnance Department, will be carried out.

INDIAN RIFLES.

As much has been said in official reports and in the public prints respecting the quality of arms used by our Indian tribes, and their great superiority to the arms in the hands of our troops in accuracy and range, I enclose a report made at the National Armory on a number of Indian arms sent to me from the field. I am willing to rest the reputation of the Springfield rifle and carbine on the facts developed in the trial and recorded in this report. Not even such an admirable weapon as the Springfield rifle can be expected to give satisfaction to every officer and soldier, but it is my firm belief that it comes very near it.

SPRINGFIELD AND PEABODY-MARTINI RIFLES.

In this connection I desire to invite attention to the inclosed report on certain comparisons instituted between the Springfield and Peabody-

Martini rifles. These trials were made to show whether the latter was so far superior to the former as was intimated by letter-writers during and after the siege of Plevna, in the Russo-Turkish war.

That the ultimate range of the Peabody should be greater was conceded, on the simple fact that the charge of powder used was 13½ grains greater and the bullet 75 grains heavier than the charge of powder and bullet of the Springfield. The trial, however, showed for the Springfield "superior accuracy," "accompanied with more power than is required to disable a man at ranges at which it is practically impossible for a marksman to hit so small an object." "At ranges of 1,000 yards and upward, the trajectory of the Peabody is slightly flatter, but at shorter ranges—those at which a rifle will ordinarily be fired in service—the trajectory of the Springfield is the flatter, owing to its higher velocity." At 1,669 yards—the longest range in the proving-ground—the Springfield hit the target—8' x 12"—3 times out of 10, while the Peabody was fired 60 rounds to hit the target the same number of times. The Army should be satisfied with such a record. I have directed experiments to be made with the Springfield rifle up to 2,500 yards, and anticipate excellent results.

MULTIBALL CARTRIDGES.

I append a series of reports on the multiball cartridge for revolver. For use in the rifle and carbine, it has not been received with favor, the reports from the field being almost unanimously against it.

Its efficiency as a revolver cartridge will depend on its results at very short ranges—certainly within 25 yards—and on the extent of its scattering. I quote from a report of Captain Greer, Ordnance Department, a most capable and experienced officer and experimenter, made June 7, last :

With regard to dispersion of fire, which is the true *raison d'être* of these cartridges, an inspection of the tables shows that at short ranges there is none at all, the bullet holes of each shot nearly coinciding. At longer ranges—75 to 100 yards—there is a considerable dispersion of balls; but they have too little power to do much execution.

The department will continue its endeavors to adapt this cartridge to the revolver, and it may be that some simple change in its arrangement and form may fulfill the conditions necessary to make it a success.

CLERICAL FORCE.

In compliance with your instructions, I have omitted in my annual estimate to ask for additional clerks, but I may be pardoned in representing the inadequacy of the force now by law allowed in this office. For the fiscal year ending June 30, 1876, there were allowed, besides the chief clerk, *three* clerks of class four, *three* of class three, *three* of class two, *eight* of class one, *one* messenger, *one* laborer, and *eight* enlisted men, a total of twenty-eight, and in grades and number these were not more than sufficient to meet the wants of the office. Since then the current work of this office has materially increased and is increasing annually, while the clerical force has been decreased. As a consequence, much important work is now, and has been for several years, running behindhand, much to the inconvenience and detriment of the public service, and not unfrequently to the hardship of individuals. I hope that, at the proper time, you will see fit to ask Congress to restore the clerical organization to its former grading.

The following statement will give some idea of the magnitude of the work of this office during the past year :

Number of cash and property returns of all kinds examined.....	7, 192
Number remaining unexamined on account of insufficient clerical force.....	4, 456
Letters and other papers received, briefed, and entered upon the records of the office	15, 494
Letters, orders, and indorsements written and sent out.....	24, 094
Number of blanks, public documents, &c., prepared and distributed.....	35, 022

I have the honor to submit the following papers, heretofore referred to :
Appendix A.—Statement of principal articles procured by purchase and fabrication at the arsenals during the year ended June 30, 1879.

Appendix B.—Statement of ordnance, ordnance stores, &c., issued to the military establishment, exclusive of the militia, during the year ended June 30, 1879.

Appendix C.—Apportionment for the fiscal year ended June 30, 1879, of the annual appropriation of \$200,000 for arming and equipping the militia, under sections 1661 and 1667 Revised Statutes.

Appendix D.—Statement of ordnance, ordnance stores, &c., distributed to the militia from July 1, 1878, to June 30, 1879, under section 1667 Revised Statutes.

Appendix E.—Statement of ordnance, ordnance stores, &c., distributed to colleges from July 1, 1878, to June 30, 1879, under section 1225 Revised Statutes.

Appendix F.—Statement of ordnance stores, &c., distributed to the territories and States bordering thereon from July 1, 1878, to June 30, 1879, under the joint resolutions of July 3, 1876 ; March 3, 1877 ; March and June 7, 1878.

Appendix G.—Statement of ordnance and ordnance stores, &c., issued to the executive departments under the provisions of the act of March 1879.

REPORTS OF THE CONSTRUCTOR OF ORDNANCE.

Lieut. Col. S. Crispin, Ordnance Department.

Appendix H.—Construction of the 11-inch M. L. rifle, converted from 15-inch S. B. Rodman gun.

H¹.—Construction of a 3-inch B. L. rifle.

H².—Construction of a 3.16-inch M. L. rifle, *chambered*.

H³.—Construction of a 3.16-inch M. L. rifle, *rapid twist*.

H⁴.—Gas-checks for B. L. rifles.

H⁵.—Alteration in 12-inch rifle-carriage.

H⁶.—Proposed chambered rifle, 4.50-inch caliber. 8

H⁷.—Report on experimental cannon powders, Capt. C. S. Smith, Ordnance Department.

REPORTS OF THE ORDNANCE BOARD.

*Lieut. Col. S. Crispin and Lieut. Col. T. G. Baylor, Ordnance Department ;
 , Capt. F. H. Phipps, recorder.*

Appendix I.—Gunpowders.

I¹.—Progress report on powders for 4.50-inch rifle.

I².—Progress report on powders for 8-inch rifle.

I³.—Progress report on 3.50-inch Deane bronze gun.

- I*⁴.—Hotchkiss revolving cannon, caliber 1.5-inch.
- I*⁵.—Flank defense carriage for Hotchkiss revolving cannon.
- I*⁶.—Relative destructive effects of different Hotchkiss projectiles.
- I*⁷.—Report on Hotchkiss revolving cannon (light field model), caliber 1.50-inch.
- I*⁸.—Progress report on 3-inch B. L. rifle.
- I*⁹.—Progress report on 3.17-inch M. L. rifle, chambered.
- I*¹⁰.—Progress report on 8-inch B. L. rifle.
- I*¹¹.—Progress report on 11-inch M. L. rifle, converted from a 15-inch S. B. Rodman gun.
- I*¹².—Reports on a Gatling gun, caliber .45-inch, English model, having a new pointing apparatus.
- I*¹³.—Report on multiball cartridges for Gatling gun.

MISCELLANEOUS.

Appendix K.—Annual report of the principal operations at the Rock Island Arsenal, 1879, Maj. D. W. Flagler, Ordnance Department, commanding.

Appendix L.—Progress report upon the artesian well at the Benicia Arsenal, 1879, Lieut. Col. J. McAllister, Ordnance Department, commanding.

Appendix M.—Measurement of powder pressures in cannon by compression of oil. Dr. W. E. Woodbridge.

Appendix N.—Trajectories of army revolvers. Capt. J. E. Greer, Ordnance Department.

Appendix O.—Trajectories of the Springfield and Peabody-Martini rifles. Capt. J. E. Greer, Ordnance Department.

Appendix P.—Experiments with small-arms—space between bullet and powder. Capt. J. E. Greer, Ordnance Department.

Appendix Q.—Action of sea-water on brass cartridges. Capt. J. E. Greer, Ordnance Department.

Appendix R.—Report on the manufacture of certain life-saving guns. Lieut. C. W. Whipple, Ordnance Department.

Appendix S.—Description of the Lyle-Emery grapple-shot. Lieut. D. A. Lyle, Ordnance Department.

Appendix T.—Description of the Laidley cavalry forge. Col. T. T. S. Laidley, Ordnance Department.

Appendix U.—Swollen barrels in service rifles. Capt. J. E. Greer, Ordnance Department.

Appendix V.—Reports on Indian arms. Capt. J. E. Greer and Lieuts. D. A. Lyle and R. Birnie, jr., Ordnance Department, and Master Machinist S. W. Porter, National Armory.

Appendix W.—Reports on multiball cartridges for small arms. Maj. J. M. Whittemore, Capts. E. M. Wright, and J. E. Greer, and Lieuts. R. Birnie, jr., and C. C. Morrison, Ordnance Department.

Appendix X.—Report on range-finders. Capt. F. H. Phipps, Ordnance Department.

Appendix Y.—Showing stations and duties of the officers of the Ordnance Department on the 1st of October, 1879.

I have the honor to be, very respectfully, your obedient servant,
S. V. BENÉT,

Brigadier-General, Chief of Ordnance.

PAPERS ACCOMPANYING THE

T OF THE CHIEF OF ENGINEERS.

OFFICE OF THE CHIEF OF ENGINEERS,

Washington, D. C., October 20, 1879.

In honor to present, for your information, the following statistics and operations of the Engineer Department for the year ending June 30, 1879.

REPORT OF THE CHIEF OF THE CORPS OF ENGINEERS.

The number of officers holding commissions in the Corps of Engineers, at the end of the fiscal year was 105 on the active list; the latter, however, under the law of January 1879, being available for duty. In the duties devolving upon the Corps and by its organizations, the employment of assistants and assistant engineers has been necessary.

In the annual report the corps has lost, by death and retirement, the following officers: Col. Henry Brewerton (retired), who died at Washington, April 17, 1879; Col. I. C. Woodruff, who died at Tompkinsville, Kentucky, September 10, 1878; Lieut. Col. B. S. Alexander, who died at St. Louis, Missouri, December 15, 1878; and Brig. Gen. A. A. Humphreys, who was retired June 30, 1879, at his own request, after more than forty years of continuous active service.

Added to the corps, by promotion of graduates of the Engineer School, were three second lieutenants and two additional second lieutenants, commissions date from June 13, 1879, but who did not enter duty till after the close of the year, and are, therefore, not included in the strength of the corps.

At the close of the year, 1879, the officers were distributed as follows:

Engineers, including the chief.....	4
Engineers and Grounds, District of Columbia.....	1
Engineers.....	2
and light-house duty.....	2
and river and harbor works.....	15
river and harbor works, and light-house duty.....	5
for works.....	27
for works, and light-house duty.....	6
Western and Northwestern lakes and Mississippi River.....	3
mouth of Mississippi River.....	1
of country west of one hundredth meridian.....	1
of Engineers.....	3
of Engineers and fortifications.....	1
of Engineers and Military Academy.....	2
commanding divisions and departments, and on river and	2
the General of the Army, generals commanding divisions light-house Establishment, Military Academy, Department of of Commissioners of the District of Columbia.....	25
.....	105

COAST AND LAKE-FRONTIER DEFENSES.

In the fiscal year work upon our sea-coast defenses has been carried on in accordance with the terms of the act of March 23, 1878, to provide for the preservation, and repair.

Subject more than any other national structures, with the exception of light-houses, to the destructive and deteriorating influences of the sea, and the amount heretofore appropriated for the

above-mentioned objects has proven insufficient, many necessary works of repair and protection remaining unexecuted at the close of the fiscal year, for want of funds.

No progress whatever has been made for several years past in the construction of new, or in the modification of our old works (built before the inventions of modern ordnance and armored ships), for want of appropriations therefor, and I beg to renew the remarks and the recommendations of the last annual report from this Department in relation thereto, as follows:

The system to govern the future construction of our works was elaborated in 1863 and will be found stated in detail in Executive Document No. 271, House of Representatives, Forty-first Congress, second session, where it will be seen the system received the approval of the General of the Army and the Secretary of War, and since then has been repeatedly indorsed by the action of Congress.

The main features of this system are the use of heavy earthen barbette batteries, with parados and traverses, of heavy mortar batteries, and of obstructions in the channels (mainly electrical torpedoes) to hold vessels from running past the batteries and reaching the cities or depots beyond them. The modification of the casemates of our masonry forts was at that time deemed premature, it being then thought preferable to await the further development of iron-clad fleets and their armaments, and to take advantage of the experience of foreign nations.

From 1869 to 1875, while appropriations for coast defense were granted by Congress, much progress was made in earthen barbette batteries for heavy guns and mortars; and further, a system of defense by torpedoes—a subject of continuous study up to this time—has been developed which only requires a sufficiency of material and trained men to put it into practice when needed. But torpedo defense, however efficient in itself, cannot stand alone; the torpedoes must be protected by shore batteries. Unfinished earthen batteries, however, provided with a small fraction only of the number of guns for which they were designed, and those of insufficient caliber, and mortar batteries without mortars, though aided by torpedoes, will form but a feeble defense against the powerful fleets prepared and now being prepared to take the high seas.

The great powers of Europe do not place their reliance on barbette batteries. They believe in, and are constructing, casemated forts, some of which are provided with wrought-iron scarps and others with iron casemate-shields to protect the gun, and gunners serving it, both from direct and curved fire. This department, while recommending and urging the construction of barbette batteries as an initiatory means of obtaining by comparatively small expenditures a partial defense for the numerous exposed harbors of our coast, has always insisted that the efficient service of the large guns mounted in them would require high parapets and depressing or counterpoise carriages. It has also, from the beginning, looked forward to the ultimate conversion of some of our casemated forts, which would admit the change, for the reception of guns of the largest caliber, and to the possible construction of new works. Within the past two years, in furtherance of these views, a large casemated fort has been designed to take the place of old Fort Lafayette at the Narrows entrance to New York Harbor. Plans also have been prepared for modifying the casemates of Fort Schuyler on the East River, and for completing Fort Carroll on the approaches to Baltimore. The modification of other casemated works is now a subject of study. It will require much time and large expenditures to make the foregoing modifications, and to complete our barbette and mortar batteries and furnish them with suitable armaments. It would be but an act of prudence to make the beginning without delay. The disasters of the first three months of a war under the present condition of our defenses might cost the nation tenfold the expenditure that would be needed to thoroughly protect our coast against attack. Our great cities, New York, Philadelphia, Boston, San Francisco, New Orleans, Baltimore, and Washington, should they fall into the hands of an enemy, would suffer ten times more than the cost of all the forts necessary to secure them against such disaster. But such reverses would also be great calamities to the nation, crippling its war power.

When the great change in ships and their armaments was initiated, Great Britain did not hesitate to appropriate \$40,000,000 for the defense of its most important harbor, and in addition she has already expended about \$60,000,000 upon her iron-clad fleet. We may well profit by her example. There is nothing so costly to a nation as lack of preparation for war. In fact, to be prepared for war will often prevent it; and though we may not feel the daily imminence of war with great foreign powers, as England did, yet with incomplete or inadequately armed defenses for our great sea-ports, even the attitude of belligerency, which we not unfrequently have to assume, has not the imposing effect it should have, nor is it accompanied with a justly founded confidence on our own part. The neglect of suitable preparation cost France

any millions of treasure, a portion of her territory, and a great humiliation. The same must inevitably happen to the United States if it does not push forward its coast defenses and provide them with guns like those possessed not only by the great powers, but even by smaller nations.

That our forts should be efficient we must have guns of power not inferior to those that will be brought to contend with them. These guns must have a protection—whether by earthen parapet and depressing carriage or by iron armor—no less efficient than that which protects the hostile gun.

Our system of torpedo defense must rely upon forts for protection, otherwise it would be rendered harmless. It would be speedily destroyed by an enemy if one of its iron-clad fleets were suffered to approach it unopposed. It is, therefore, by the combination of the two systems, viz, the torpedo defense and shore batteries, that our harbors can be made secure against the powerful iron-clads of the present day in the event of war with a maritime nation.

It concerns the honor of the United States, when involved in controversy with other powers, to be able to appeal to the sword, but that appeal should be accompanied by the consciousness that the weapon appealed to would not be inferior to that held by the adversary. This relation of inferiority may at present exist though the adversary is a comparatively weaker power.

We have the assurance that iron plates can be manufactured in this country equal in magnitude and not inferior in quality to those which fifteen years of experience have enabled the English rolling-mills to turn out.

During the past fiscal year plans have been prepared for the modification and completion of two more very important casemated works, viz, the fort at Sandy Hook, the outermost of the works for the defense of the southern approaches by sea to the harbor and city of New York; and Fort Wool, designed to command the entrance to Hampton Roads and defend the passages from sea to the city of Norfolk and its navy-yard. These works, with the three important casemated works especially mentioned in last year's report, viz, Fort Schuyler, commanding the East River approach from sea to the harbor and city of New York; the work designed to replace old Fort Lafayette at "The Narrows" entrance to New York Harbor; and Fort Carroll, which commands the approach from sea to the rich and important city of Baltimore, await appropriations for their construction. Their plans, which have been carefully prepared in the light of full information respecting the recent great improvements in ordnance and armor, provide for mounting the heaviest of modern rifled guns, and for resisting the projectiles of cannon of the immense calibers now possessed by nearly every maritime nation of Europe. Plans for similar modifications of the more important of the other casemated defenses of our harbors will be made as rapidly as practicable, and in the mean time it is urgently recommended that appropriations be made by Congress for the works just mentioned and for the earthworks recently designed for many of our harbors for mounting heavy rifled guns and mortars, which have been already partially constructed, or for which the plans are ready for execution, as will be observed in the synopsis of the reports of the several officers in charge.

It is certain that in our present condition, injuries to our citizens abroad and insults to our flag, could not be resented with that vigor and promptitude demanded by the dignity and honor of the nation, and justified by the knowledge that our fine harbors, important navy-yards rich commercial cities, and depots for military and naval stores were guarded by impregnable fortifications and obstructions; and in earnestly urging the importance of early and reasonable appropriations for our sea-coast defenses I cannot do better than to quote the language of my distinguished predecessor in his letter to the Military Committee of the House of Representatives contained in Report 354, House of Representatives, Forty-fourth Congress, first session, pages 179-181, as follows:

In the event of war with a maritime nation, if we had no well-digested system of sea-coast defense ready for use, the cruisers and war vessels of the enemy could run

into our harbors, and, without landing, could either destroy the property along our shores, or else lay the people under contribution. The accurate detailed charts of our harbors and channels published by the United States Coast Survey are accessible to all such nations, and are doubtless in their possession. If the enemy possesses depots and arsenals in close proximity to our shores, the arrival of such armed vessels will follow in a few hours after the declaration of war. Thirty-six hours' steaming could bring vessels from Halifax; six hours, vessels from Havana; and ninety-six hours, vessels from Victoria, Vancouver's Island, to important harbors of the United States. There might be very little time for preparation to meet the assaults of iron-plated ships, for they are plated with from six to fifteen inches of iron, and carry rifled guns from nine inches to fourteen inches bore, all of which guns are more powerful than any gun we have in our service. With a fleet, or even a single vessel of this kind in one of our harbors, it would be of no avail to collect troops in the city or town threatened. Suppose, with our railroad facilities, we could concentrate 100,000 men in twenty-four hours at the point threatened, of what use would they be against the armored ship? Suppose that in a night the men concentrated could throw up earthworks and mount 32-pounders, 42-pounders, 100-pounder rifles (even if it were possible to handle guns of this small size with the rapidity assumed), what injury could all this do to the armored ship in question? The projectiles from such batteries would fall harmlessly from the side of the enemy. While lying, if need be, beyond the range even of our guns, with his more powerful armaments he would pierce such parapets through and through, dismount the guns, and explode such magazines.

But it may be said that we would mount guns as powerful, and even more powerful than those of the enemy. Doubtless this would be done; first, if we had such guns in our service, and, second, if we had the time.

Our largest gun, of which we have any number, is a 15-inch smooth-bore, and weighs over 25 tons. We have about 325 of them for our entire coasts of 12,600 miles, exclusive of Alaska, and beyond a range of 1,200 yards it is a less powerful gun than the 9-inch rifle of 12 tons. The 10-inch rifle weighs 18 tons; the 11-inch, 25 tons; the 12-inch, 35 tons; and the 14-inch, 81 tons; and these guns are immeasurably superior to our 15-inch smooth-bore. They are the kinds of guns we must mount in batteries against the iron-plated vessels. But their great weight and size require corresponding dimensions in the batteries in which they are placed, and in the strength and solidity of the platforms upon which they are mounted. The parapets and traverses of earth and sand to protect them must be three and even four times as thick and massive as they were formerly built, to resist the armaments of fifteen years ago. Where the parapets of earth were but 10 feet in thickness, now they must be 40 feet. Guns that were formerly dragged with ease by fifteen or twenty men, and placed in position over night, are now supplanted by armaments of such huge masses that special mechanical appliances are required to move them even slowly, and cannot be lifted upon their supports without the aid of hydraulic power. No matter how many men may be at our disposal, the time required to place the modern armaments in position is vastly greater than for the guns of fifteen years ago, and before such works could be improvised in a harbor, the enemy in his iron-clads will have accomplished all he desired, and have sailed or steamed for some other harbor to repeat the injuries of the first. But suppose the harbor in question was on the New England coast, and the season of the year the winter—when the the ground is frozen hard—then the erection of efficient earthen batteries would be out of the question. Or suppose the harbor was on the Gulf coast, and the season the fall of the year, when only the acclimated could resist the effects of the malarial shores; under such circumstances the erection of efficient batteries would be exceedingly difficult.

Three methods suggest themselves for preventing the enemy from entering our harbors:

1st. To stop up the channel-ways by permanent obstructions sunk across the channels, effectually closing the harbor to all egress as well as ingress.

2d. To provide for the harbors a force of armed vessels and torpedo-boats superior in strength to the fleet of armored vessels and torpedo-boats which the enemy could bring against us. But this would require us to build and maintain as many fleets of this character as we have harbors to be defended, and would involve an expenditure that this country could not afford. The cost to us of the iron-clad fleet during the late war amounted up to January 1, 1870, to \$35,371,064.11. (See Executive Document No. 72, Senate, Forty-first Congress, second session.) The cost to us of such vessels as the British ship *Monarch* would not be less than \$100,000 per gun, and the deterioration of the vessel not less than 5 per cent. per year.

3d. To place guns of proper size and caliber in suitable batteries along the shores of the channels and fairways leading into the harbors, and to obstruct these channels by electrical torpedoes that can be rendered in an instant harmless for our own vessels, or active against an enemy, and which, acting as an obstruction, will hold the enemy under the fire of our guns.

This method of batteries and of obstructions is the least expensive method that can

devised, for our new batteries do not cost on the average over \$16,000 per gun. It is the method that has been pursued by all nations from the earliest times. It was used by our English ancestors in the colonial times during the French and Spanish wars, and it was used during the Revolution.

Batteries of heavy guns, with obstructions to hold the vessels under the fire of the guns, is the true method of defense for our harbors, and is the means we are now employing and collecting, and these works should not be abandoned. Our labors are now restricted to the preparation of powerful barbette batteries (by the enlargement of old and the construction of new earthworks) capable of carrying the large modern guns; and to the collection of torpedoes for obstructions. The works are almost wholly of earth and sand; they are the cheapest works that can be devised, but they must be prepared before actual hostilities are upon us." This is the practice of all maritime nations, and England, with the most powerful fleets in existence, has expended upon nine harbors of her coast, from 1861 to 1875, 6,987,910 pounds sterling, or nearly \$35,000,000 in gold (see Report Fortifications, &c., ordered by the House of Commons to be printed August 11, 1875, 432), and is still actively engaged in this work.

Our country is contiguous throughout its northern boundary with the most powerful maritime power on the earth, and close upon our southern shores is another whose strength is not to be despised. These are the nations with whom complications are most likely to arise.

Many of our works are in an unfinished, transition state, our supplies of torpedo materials are insufficient, the caliber and force of our guns are too small, and under these circumstances I must reiterate, the work on our sea-coast fortifications should not, in my judgment, be suspended.

The estimates submitted, based on the several estimates of the officers in charge, which have been carefully revised, present the amounts which, in the judgment of this department, are necessary for the completion and commencement of projects during the coming fiscal year.

Special attention is invited to the estimate of \$100,000 for providing torpedoes or submarine mines to be stored in our fortifications, from which they will be planted, in time of war, in the channels and fairways of our harbors.

Fortifications and torpedoes should be considered the twin defenses of our coasts, the latter being designed to form an obstruction or obstacle at the entrances to our harbors and to hold an enemy's vessel under the fire of the former.

The charges in the torpedoes being fired by the electrical current, any parts of the system cannot be obtained in an emergency. It is to procure and store torpedoes and such portions of the apparatus as cannot be speedily obtained in the event of sudden hostilities that the appropriation is asked.

Special attention is also asked to the item of \$100,000 for preparing our most important forts for operating submarine mines, by providing bomb-proof cover, galleries of approach, &c.; all these being essential to the successful operation of the torpedo system of defense, in connection with the forts themselves.

* * * * *

BOARDS OF ENGINEERS.

The Board of Engineers for Fortifications, stationed at New York City, consisting of Col. J. G. Barnard, Col. Z. B. Tower, Col. H. G. Wright, and, for the time being, the officer in charge of the defenses under consideration, has been engaged upon the duties, and has submitted the reports mentioned in the following summary:

In September, 1878, the board presented memoranda upon our system

* Since the date of the report from which this extract is quoted, this department has, with much care, and in the light of full information respecting the recent great improvements in ordnance and armor in European maritime countries, prepared plans for the modification of certain of the most important of our old casemated works, and has submitted estimates for appropriations for the same. (See page 432.)

coast defense, setting forth briefly the action of this board in reference hereto, the present weak condition of the works, and the immediate necessity of appropriations for resumption of work upon them, in accordance with plans adopted for their modification to prepare them for the reception of guns that will be available against iron-clad fleets.

January 30, 1879.—The board reported upon the government reservation at Sandy Hook, N. J., its necessity for defensive purposes, and the propriety of permitting the temporary occupation of some portion thereof by a private company.

September 4 and October 28, 1878.—Upon the use of 8-inch converted rifles in casemates, and the distribution of those ready to be mounted.

November 9, 1878.—Upon system to be adopted for the delivery, storage, and preservation of torpedoes and their accessories in forts, for the defense of which they will be needed.

February 8, 1879.—The board, with Col. J. N. Macomb, Corps of Engineers, as member thereof for that purpose, to whom had been previously referred the subject of the growing obstructions in the harbor of the Delaware Breakwater, submitted its recommendations for remedying the same, together with its views upon Captain Ludlow's project for improving this artificial roadstead.

March 23, 1879.—Project submitted for the expenditure of the appropriation for torpedoes for harbor defense for fiscal year ending June 30, 1880.

April 28, 1879.—Defenses of Fernandina Harbor, Florida. The board during the year 1878 had prepared plans for modifying Fort Clinch, but reserved them for further study. Reconsidering the question, quite different plans have been prepared during the past year, which, while much less expensive, are thought to be quite commensurate to the present requirements of the position. These plans, with report thereon, were submitted April 28, 1879.

May 22, 1879.—Report submitted upon application of Col. G. W. Getty, requesting permission to construct models of certain of the fortifications of the United States to be used for purposes of instruction at the artillery school.

Fort Wool, Hampton Roads, Virginia.—This fort has been a subject of much study on the part of the board. A plan for its completion by the addition of a barbette tier for 12-inch rifle guns, reserving its casemates (embrasures strengthened as far as possible) for 9-inch rifles, was prepared as early as 1870. With the improvement of guns from year to year, up to their great increase of caliber as developed very recently, a reconsideration of this work has been necessary. The first study of the past year, aiming at the greatest development of offensive power attainable, gave plans for modifying Fort Wool for the reception of twenty-one 81-ton guns and five 12-inch rifles. The ultimate opinion of the board, however, favored a less expensive work, and a revision of the plans to meet this view was made, with a report thereon submitted June 14, 1879. In connection with the works devised already and that will be required in the future on the Fort Monroe side of the entrance to Hampton Roads, the less costly plans are deemed sufficient.

Sandy Hook, New Jersey.—The modification of the fort devised for the northern point of Sandy Hook has occupied the attention of the board for the past six months. Almost every possible combination has been studied and drawn to exhibit the power and capacity of the fort if finished on its present lines. The various phases of the question thus presented gave, by comparison and arrangement, the final plans adopted, which, though not the strongest possible combination, seemed quite

proportionate to the development elsewhere, as well as to the needs of the position.

The board has also under study the subject of the modification of the casemated fort at Willet's Point, eastern entrance to New York Harbor. Plans exhibiting the proposed modifications are well advanced towards completion.

PROJECT FOR THE YEAR 1879-'80.

Two years since, this board in its annual report set forth fully the work it had done in planning defenses for the Atlantic, the Gulf, and the Pacific coasts, in accordance with conclusions reached in 1869—and reported upon—as a system not too costly and quite practicable in an engineering point of view, though but a partial solution of the question of national defense. The work of the board involved the consideration of every harbor upon our extended sea and lake coasts that demanded protection. Besides modifying nearly all of the barbette batteries of existing works, and those exterior thereto, many new batteries were planned. The system, however, was one of defense by barbette guns with the maximum caliber of the 12-inch rifle. Though with slight alterations and the substitution of suitable platforms, the barbette batteries projected and partly built can be made to accommodate the very large guns recently manufactured at the Essen, Woolwich, and Elswick factories, yet this board has been and is still of the opinion that such guns should be put under cover, either in casemates or in turrets. For the past two years the question before it has been mainly the conversion of some of the more important forts to the reception of such guns. Thus far it has dealt with works which, from the width of their casemates or from their state of progress, permitted the conversion or the finishing in accordance with the general method adopted for the new work planned for the site of old Fort Lafayette. Designs have thus been presented for both the eastern and southern entrances to New York Harbor, viz., for Fort Schuyler, Fort Lafayette, and Sandy Hook; also, for Fort Carroll, entrance to Baltimore Harbor; and for Fort Wool, Hampton Roads.

There are many important forts which were finished according to the system that prevailed prior to 1860, and which will not permit modification of their casemates for the reception of the large guns now required for sea-coast defense. Of these works may be mentioned Forts Warren, Adams, Trumbull, Wadsworth, Delaware, Taylor, Jefferson, and fort at Fort Point, San Francisco Harbor, Cal. How to utilize these works, and by what means prepare them for guns absolutely necessary for defending the positions they occupy, are questions now before this board, and which it proposes taking up during the present year. Their discussion will involve the question of turrets, of machinery, &c., and will require the aid of good draughtsmen, themselves capable mechanical engineers.

Naval power has made rapid advances within the past ten years. Shore defense seems to have gained but little beyond its torpedo lines, except that incidental to the increase of the caliber and power of guns. There has been but little accomplished in the way of making provision for utilizing such guns for shore defense. The present problem is to provide protected emplacements for these large guns in or on our sea-coast works, and with such mechanical appliances that they can be maneuvered with facility like those on ship-board. Until that end is accomplished, the shore defense will be by all odds inferior to the naval attack, and the safety of our harbors will depend entirely upon our ability to maintain our torpedo lines in the face of a fleet of iron-clads.

TORPEDO DEFENSE.

The work of the board in this connection, for which special duty Major L. Abbot, Corps of Engineers, in charge of the torpedo school at Pilets Point, is a member, is exhibited as follows:

During the past year Major Abbot has devoted much time and labor to the final reduction of the data accumulated since the beginning of the trials, in 1869, for developing a system of torpedo defense for our harbors and navigable channels.

The subjects of subaqueous explosions and of electrical fuzes have been thoroughly discussed, and 116 pages treating of the former have been printed by soldiers of the Engineer Battalion, and are now in the hands of the board.

The results of this analysis are highly satisfactory. Major Abbot has been able to revise the constants of his formulæ so that it is evidently applicable to all varieties of modern explosives. The important subject of the destructive range of torpedoes can thus be treated in the manner usually adopted for engineering problems.

The subjects covered by this investigation are much too extensive to be even mentioned here; but the following table, exhibiting the relative intensity of action of several of the modern explosives, when exploded under water in torpedo cases, is given as a sample of the work:

Dynamite, No. 1	100
Gun cotton	87
Dualin	111
Bendrock	94
Dynamite, No. 2	83
Vulcan powder	82
Mica powder	83
Nitro-glycerine	81
Hercules powder, No. 1	106
Hercules powder, No. 2	83

It should be added that, for various reasons not necessary to discuss, the board is agreed that dynamite No. 1 should be adopted for our service.

To illustrate the precision of analysis rendered possible by the formulæ deduced from the data collected, the following example is given:

The problem is to determine the crater radius (r) which will be produced in ice from 8 to 10 inches thick, by the explosion of (c) pounds of a modern explosive, of which the constant is (E) submerged (S) feet below the surface, the angle from the nadir to the line of fracture being (δ). For dynamite No. 1 the numerical value of E is 186. The formulæ are:

$$r = \frac{S}{\cos (180 - \delta)}$$

$$(\delta + E) \cos^{2.1} (180 - \delta) = \frac{10.49S^{2.1}}{c}$$

Twenty-one trials were made with dynamite No. 1, dualin, and gun-cotton, with charges varying from 1 to 10 pounds, and submergences varying from 2 to 13.5 feet, and crater radii varying from 0 to 14.1 feet. The maximum discrepancy between observation and the indication of the formulæ was 1.2 feet in the crater radius, the mean discrepancy being 4.5 inches.

Thirty-five shots have been fired in the submerged ring, chiefly to test new explosives; and this work will be continued during the coming season.

Many experiments have been made with electrical fuzes, employing original methods and apparatus. The object has chiefly been to detect any deterioration due to long storage. The result has shown that our adopted patterns exhibit none, and some of the samples have been on hand eight years.

One of our buoyant mines, after being submerged in the channel off Willets Point for four years and five months, has been found to be in a perfectly serviceable condition, thus sufficiently proving its trustworthy character.

Attention should be invited to a very compact and simple dynamo-electric machine made by the Laffin and Rand Powder Company. The cost is only twenty-five dollars, and the instrument is admirably adapted for use as a portable igniting apparatus for torpedoes and heavy ordnance. It has been carefully tested by practical use at Willets Point during the past two years.

A supply of torpedo cable insulated with kerite and made in this country has been purchased for trial during the past year. The insulation is low, varying from fifty to one hundred megohms per mile, but the material promises well in respect to permanence. Time alone can properly test its value, and measures have been taken to determine this important point.

Experiments have been continued with the electric light to test its value as a means of protecting our mines against operations of the enemy. The results upon the whole are satisfactory.

To determine the destructive range of countermines which may be employed by an enemy against our mines, a charge of 500 pounds of dynamite No. 1 was exploded last autumn. This charge was contained in an iron torpedo resting just above the bottom in water 20 feet deep. It was surrounded by our service mines at various distances, and the result proved that its power of injuring them was far less than the estimates given in foreign journals. A charge of eight pounds of dynamite No. 1, contained in a cast-iron shell, was placed at a horizontal distance of 40 feet from the exploded charge, and was not detonated by sympathy. It was subsequently cracked open by a charge of half a pound of dynamite laid upon it when supported upon a rock in the air, and the charge (1 lbs.) was thus recovered quite uninjured. This experiment has been repeated several times, and in no case has the charge been fired. Charges of one pound of dynamite contained in tin cases were suspended at various distances from the great mine, and even when crushed at 80 feet, were not fired by sympathy. These experiments seem to prove that the danger of sympathetic explosion of mines charged with dynamite has been greatly exaggerated in Europe.

To obtain some precise data upon the manner in which the forces developed by a subaqueous explosion act upon a vessel, an old schooner was blown up last autumn at Willets Point. Her name was "Olive Branch"; length, 71 feet; tonnage, 60 tons. She was anchored in water 15 feet deep. Two torpedoes, each a beer-keg containing 50 pounds of mortar powder, were suspended 10 feet apart and 3 feet below her bottom midships. They were submerged 7 feet. Six cameras were placed at a distance of about 500 feet, so arranged that by the aid of electricity instantaneous views could be taken at the pleasure of the operator. The time of explosion and of dropping each camera slide was electrically recorded on a field chronograph. The torpedoes were exploded simultaneously. A picture taken one-tenth of a second thereafter showed the bow and stern plunged in the water, and the middle of the vessel raised about 16 feet in the air. The masts were still vertical, and

the jet of water had reached a height of about 70 feet. The second picture, taken 1.5 seconds after the explosion, showed a column of water 160 feet high, containing many fragments of the wreck. The third picture, taken 2.3 seconds after the explosion, showed the jet at its maximum, 180 feet high. The air was full of fragments, but apparently none had yet begun to fall back to the water. The fourth picture, about 3.3 seconds after the explosion, exhibited a descending mist; the water agitated by heavy splashes of fragments, and the site of the wreck shrouded by a cloud of smoke. The fifth picture, taken a second later, showed only a thin cloud of mist and smoke, with no evidences of violent action remaining.

Thus the total destruction of the schooner had only consumed about 0.1 of a second, and the whole exhibition of power only about 4.5 seconds. The exceedingly short duration of the destructive action leaves no doubt that upon the mean and not upon the maximum intensity of action (pressure), will the useful effect probably depend.

The purchase and storage at our forts of the material approved for the torpedo defense of our harbors has continued during the past year so far as permitted by the limited appropriations granted by Congress. It should be understood that large sums can now be judiciously expended, and that, in the present unsatisfactory condition of our heavy ordnance, as presented in the reports of that department, the safety of our coast may depend largely upon having a suitable supply available for immediate use.

RECOMMENDATIONS BY THE BOARD.

It is the duty of the board to again invite attention to the urgent necessity of increasing the number of enlisted men of the Battalion of Engineers sufficiently to enable them to properly perform the new duty assigned them by Congress of acting as a Torpedo Corps for the defense of our extended coast. The minimum force consistent with reasonable efficiency has been carefully estimated at 520 men, and the number now available is only about one-fourth of that figure. No increase in the legal organization nor in the number of officers is required. A provision, authorizing the President to recruit the companies to the standard now authorized by law, will supply the needful number. The duty is perhaps more technical than any other in the Army, and requires special qualifications and special training; and the men are equally as available for other duties in an emergency as those enlisted in the other three combatant arms of the service.

The board would renew its recommendation that a special appropriation be requested for preparing our forts for operating torpedoes. At the outbreak of hostilities it will be too late for this work to be properly done; the cost is small; the necessity is evident. An appropriation of \$100,000 would suffice to place many of the more important works in an efficient condition for this service.

For the purchase of torpedo materials, and for instructing the engineer troops in the use of the same, and for continuing the trials designed to perfect the system, an appropriation of \$100,000 is recommended.

* * * * *

RIVER AND HARBOR IMPROVEMENTS.

The construction, repair, preservation, and completion of certain public works on rivers and harbors, and the surveys and examinations connected therewith, have been prosecuted during the fiscal year ending

June 30, 1879, with the means provided by the river and harbor act approved June 18, 1878, and with the balances of previous appropriations remaining unexpended July 1, 1878, and available for objects therein specified.

Amount appropriated by act approved June 18, 1878.....	\$3,201,700 00
Balances of former appropriations applicable to continuation of work July 1, 1878.....	1,608,678 48
Amount appropriated by act approved March 3, 1879, exclusive of ap- propriations made for improvement of South Pass of the Mississippi River.....	7,094,100 00
	<hr/>
	16,904,478 48
Amount expended, including outstanding liabilities, during fiscal year ending June 30, 1879	6,132,301 95
	<hr/>
Amount available July 1, 1879.....	10,772,176 53

The act of March 3, 1879, makes provision for 249 works of improvement in sums varying from \$1,000 to \$300,000; and for surveys and examinations with a view to improvements at 98 localities.

The appropriations contained in the above act, except in cases of emergency, were not made available for expenditure until July 29, when instructions were issued to the officers to proceed with the execution of all works the plans and projects for which had been previously approved. In the case of new works, examinations, investigations, and surveys were at once undertaken, upon the results of which depend the selection and determination of the proper projects for the works of improvement. In some cases, delays have arisen from the necessity of considering certain legal questions which must be settled before the money appropriated can be expended upon the sites.

The examinations and surveys required and provided for in the second and third sections of the act have been distributed and assigned to the officers in charge of the several river and harbor districts; and it is expected that, with few exceptions, reports may be received in time to be submitted during the ensuing session of Congress.

There is given below a brief summary for each improvement, showing its condition and progress made during the fiscal year, accompanied by a money statement setting forth the amount expended during the fiscal year; the amount available July 1, 1879; and, in compliance with the requirements of section 2 of the acts approved June 23, 1866, and March 3, 1867, "a full estimate for its [each work] entire and permanent completion, with the amount that can be profitably expended in the next fiscal year." For more detailed information in regard to each work attention is respectfully invited to the reports of the officers in charge, which will be found in the appendix.

The Board of Engineers constituted in July, 1878, to take into consideration the improvement of the low-water navigation of the Mississippi and Missouri Rivers entered upon the duties referred to in the last annual report, and made considerable progress in the surveys, examinations and investigations, preliminary to the preparation of a systematic plan of improvement, but in consequence of the creation of the Mississippi River Commission, in compliance with the act approved June 28, 1879, the Board of Engineers was, by your direction, on July 25, 1879, dissolved, and its secretary was directed to prepare, under instructions of Col. Z. B. Tower, Corps of Engineers, the information collected, with a view to its being turned over to the commission.

A preliminary report from this Board was transmitted to Congress in January last, as also a report with reference to the effect of a continu-

ous and permanent levee system on the Mississippi, below the mouth of the Ohio, upon the low-water navigation of the river, and its benefits in affording facilities to its commerce in high stage.

* * * * *

ESTIMATE FOR AMOUNT REQUIRED FOR MILITARY SURVEYS AND RECONNAISSANCES IN MILITARY DIVISIONS AND DEPARTMENTS.

For military surveys, reconnaissances, and surveys of military reservations by the engineer officers attached to the various headquarters of military divisions and departments an average of \$5,000 for each of the nine military divisions and departments west of the Mississippi River, and \$5,000 for publication of maps; total, \$50,000.

OFFICE OF THE CHIEF OF ENGINEERS.

In the labors of the office the Chief of Engineers was assisted, on the 30th of June, by the following officers in charge of the several divisions:

FIRST AND SECOND DIVISIONS.—*Fortifications, battalion, and engineer depot, lands, armaments, personnel, &c.*, Maj. George H. Elliot.

THIRD DIVISION.—*River and harbor improvements, &c.*, Lieut. Col. John G. Parke.

FOURTH AND FIFTH DIVISIONS.—*Property accounts, estimates, funds, survey of the lakes and the Mississippi River, explorations, maps, instruments, &c.*, Capt. Henry M. Adams.

Very respectfully, your obedient servant,

H. G. WRIGHT,

Chief of Engineers, Brig. and Bvt. Major-General.

HON. GEORGE W. MCCRARY,

Secretary of War.

REPORT OF THE CHIEF SIGNAL-OFFICER.

WAR DEPARTMENT,
OFFICE OF THE CHIEF SIGNAL-OFFICER,
Washington, D. C., November 15, 1879.

SIR: Fort Whipple has continued to be the military school of instruction and practice for the discipline and duties of the Signal Corps. The course embraces the drill and instruction in military signaling and telegraphy, meteorology, and the duties of the Signal Service at stations of observation and report, thus including those of the service on the sea-coast, and in the interior, together with those relating to the construction, maintenance, and operation of the now extensive telegraph lines connecting frontier settlements and military posts. The drills of the corps—with arms, with Gatling guns, in the maneuvering of field telegraphic trains, and the arrangements for the defense of them, the procedures for the rapid erection of telegraphic lines, the management of the signal and other apparatus habitually used by the corps in the field or in time of war—have been regular and thorough.

Particular attention has been given in the year just passed to the drill of the force with arms and to such armed maneuvers as would be necessary for the corps in time of war. A rigorous practice of this kind is required for a force organized to act—armed, if need be—independently of other organizations, and to be capable of protecting with its own guard its own material and works.

Experiments in signaling and telegraphy are made at Fort Whipple

der proper supervision. It is endeavored to keep up in all improvements with the progress made by scientific ingenuity in the specialties of the service, in the use of improved war material, and in the different modes of rapid communication now necessary and expected to be used, as of course, in war. With each ensuing year the duties of posts analogous in their service to the Signal Corps become more prominent, and hardly a month passes without some suggested improvement in telegraphic or signal apparatus, or in the methods of using them. Each are here tested as may have received the notice of this office, or which attention is directed by higher authority. It is by following the results determined by tests had at this office and at Fort Whipple that the proper construction of the iron lines now so successfully used on the sea-coast and for the connection of posts, settlements, and stations on exposed frontiers and in the uninhabited interior has been arrived at. A practice line, 40 miles in length—a portable field-line being used—has been maintained, standing on the military reservation of the post for the experimental testing of the uses of the telephone, and for experiments had in reference to the working of the line itself when equipped with the ordinary telegraphic instruments. The telegraphic line connecting Fort Whipple with this office—a field line—has been in constant use, different forms of telephones being employed upon it. Telephonic communication is adopted as the usual mode for all communications between this office and Fort Whipple. The wires are so arranged and loaded with instruments that the ordinary modes of telegraphing may be used for any matters requiring to be of record. As a result of the experiments with telephones, telephonic communication has been established at points upon the sea-coast. Where connecting the life-saving stations, it has been used with fair success.

A series of experiments has been made with sun-flashes, with a view to improving upon the forms of heliograph to be adopted for the general use of the Army. There have been other experiments, for which the post and the force stationed at it furnish, as they are intended to do, good facilities, as described in preceding reports.

The duties at this post are conducted under strict military rule. The post is controlled as connected with and as forming part of this office. The officers of the Signal Corps pass a course of drill and instruction, and serve regularly at this post before being put upon any other duty in the Signal Service. It is recommended that all officers of the Army intended to be instructed as acting signal-officers, or to be temporarily instructors in geographical military departments for the field duties of the Signal Service, be here instructed before being put upon detached duty. Instructors not themselves thoroughly instructed are worse than useless. It is aimed to furnish, through the thorough course of study and practice at Fort Whipple, a force of enlisted men, enlisted after examination, thoroughly disciplined as soldiers, and fitted by careful special instruction for the special duties of the Signal Service.

The importance of the field duties of the Signal Service, and of the modes of communication such services make possible, are now recognized throughout the world. The modes of instruction in field or outdoor signaling, now nearly similar in the Army and Navy of the United States, ought to be made so absolutely, and a course so complete established that any force of either arm will be surely competent at any time to put itself in signal communication with any other force either of its own or of the other arm within signal distance. It is not necessary now to represent the length to any who have served in or read of recent wars the propriety and the need that any armed force of any army should be able to wire

or to communicate by other signals with any other of the same nationality or obeying the same general command.

The habitual practice of the duties of field signaling and telegraphy ought to become a part of the regular exercises adopted for the militia forces of the different States. To a small extent this practice has been already entered upon in some of the States,

The course of instruction at Fort Whipple, for officers to be acting signal-officers, and that for enlisted men, candidates for promotion to the grade of sergeant in the Signal Corps or to the grades of first-class privates and corporals, are given herewith. (Paper 1.) They embrace such branches of study as experience has shown best suited to fit the pupil for the different positions of duty in which he may be placed. Papers 2 and 3 exhibit the names and number of officers instructed and the amount of field practice had by each.

One hundred and twenty-two enlisted men have been instructed for the position of assistants to observers. Of this number one hundred and two completed the course of instruction, drill, and practice, passed the necessary examination, and have been ordered to duty at stations as assistants. Two were discharged the service at their own request, five for cause upon the recommendation of the Chief Signal Officer, and thirteen are still under instruction. (Paper 4.)

Nine enlisted men have been instructed for promotion to the grade of sergeant. Of these, eight, successfully passing the examination, have been promoted and assigned to stations. One failed to pass the examination. (Paper 5.)

The action of Congress, in permanently organizing the enlisted force of the Signal Corps and increasing its number, has imposed additional labor upon the instructor.

The habitual drills with arms, at the post, of all the enlisted force stationed at the office of the Chief Signal-Officer in Washington, in connection with the enlisted force at Fort Whipple, has rendered possible thorough practice during the year. Drills of the telegraphic train complete, embracing four sections, have been regularly established.

During the year ending June 30, 1879, First Lieut. R. P. Strong, acting signal-officer, has continued in charge of the post.

The duties of instruction have been under the immediate charge of the First Lieut. F. C. Grugan, acting signal-officer, who has also acted as A. A. Q. M. and A. C. S.

Acting Assistant Surgeon L. W. Ritchie has remained in charge of the hospital.

The post is in commendable good order. The buildings are sufficient in number, commodious, and comfortable. The health of the post has continued excellent.

A fire-engine is needed for the proper protection of the buildings and valuable property stored at the post.

The number of men at Fort Whipple for duty has varied during the year from one hundred and two to forty-one, and the number of officers from nine to three. The average number of enlisted men present during the year has been seventy-six.

The morning report of Fort Whipple, Va., for June 30, 1879, exhibits fifty-seven enlisted men present for duty, of whom five were sergeants, two were corporals, forty-eight were privates, one commissary sergeant, and one hospital steward. Of this force, twenty-eight privates were under instruction for the position of assistant on station.

In preceding reports the Chief Signal-Officer has expressed his conviction that the economy assured to the United States by the duties prac-

ed at this post far exceeded the annual cost of maintaining it. Longer experience confirms this view.

As stated in that report, this post alone has made it practicable to put station duty and in charge of stations those non-commissioned officers and men only who have been drilled, taught, tried, and so known to be fit for the labors and responsibilities to be required of them. There is no one of its varied duties but to which the force of the Signal Corps can be here habituated in practice before being brought to face the difficulties of its actual discharge. The benefits resulting from the school of practice, in which men are trained to be at once soldiers and telegraphists, have been evidenced throughout the United States.

The enlisted men of the Signal Corps are engaged on duty as constant time of peace as in the presence of actual war. The uses of the post at Fort Whipple for the discipline and instruction of the officers and enlisted men of the corps do not cease while either remain in the service. The force, made useful in time of peace by employment through which it is now admitted they return to the United States more than the cost of the service, is kept in readiness for any emergency of armed duty by regular drills, in which the officers and men stationed at this office and those whose changes of station bring them even temporarily within reach of Fort Whipple are there practiced and maneuvered as a part of their customary duty. Men thus practiced are trained in discipline, and look upon events transpiring in their vicinity with soldierlike views.

The advantages of having distributed in the different cities of the United States a force of men with such training, habituated to acting in concert by order, and promptly; capable of reporting simultaneously by telegraph and in cipher, as a duty, upon matters of military interest to which their attention may be directed, aside from the routine duties of their station, have been sufficiently evidenced. The self-possession of the non-commissioned officers in charge of stations, their prompt, precise, and reliable reports, rapidly collected over great extents of territory, for the information of superior authorities, in emergencies which have occurred, have received the warm commendation of officers high in rank. The rapid making of reports of this character and the collection of them over the telegraphic wires, by aerial signals, or by other methods of communication, is the especial duty required in the service of the corps in time of war.

It is considered that the movements of the Army of the United States can be made by this agency as rapid on occasions of need as any of which there is record.

It is difficult to compute in money value the power of attaining such results. The advantages resulting to the War Department and to those specially charged with the management of the duties so varied and extensive as those of the Signal Service have become, from the knowledge that of all the force of the Signal Corps the course pursued leaves no man who, called upon for any duty of the service, would fail to be found fitted for it by careful instruction, are evident.

Meager reports only have been received of the instruction for the field duties of the Signal Service had elsewhere than at Fort Whipple.

The Chief Signal-Officer is confirmed in the view hitherto expressed that the general instruction of the Army to be successfully carried on should be confided to officers first carefully instructed themselves, and responsible to the Chief Signal-Officer for the discharge of their duties as instructors.

It is recommended that provision be made that a force of six subaltern officers may be constantly under instruction at Fort Whipple in the duties of field signaling and telegraphy, it being understood that as each

station duty; the receipt, record, and publication of daily weather reports, and of the property division.

Assistants, First Lieuts. J. P. Story, H. H. C. Dunwoody, Robert Craig, and C. E. Kilbourne, acting signal-officers, and Cleveland Abbe, M., have alternated, under the direction of the Chief Signal Officer, in immediate charge of the issue of cautionary signals, synopses, and indications, and the preparation of the publications of the office. First Lieut. A. W. Greeley, acting signal-officer, has also assisted in the work of these publications.

Lieut. W. E. Birkhimer, acting signal officer, has been in immediate charge of the telegraph room of the office and duties connected with the coast lines.

First Lieuts. Robert Craig, J. McClellan, J. A. Buchanan and B. H. Man, and Second Lieut. C. A. Tingle, acting signal officers, have been at different times attached to the office as inspectors.

The Chief Signal-Officer refers with pleasure to the faithful services of these officers, as also of those serving at Fort Whipple and on detached duty elsewhere. The zeal and interest in the service manifested by the acting signal officers, as a class, have won success in the duties in which they have been charged.

The aggregate of office correspondence has become very large, embracing many thousands of communications, exclusive of telegrams sent and received. The record is herewith. (Paper 6.) While the office work has increased in magnitude, it has not changed markedly in character since the date of the last annual report. As then stated, the office is in communication with numerous foreign correspondents, having now official relations with the scientific men and the chiefs of meteorological services of nearly every prominent power in the northern hemisphere. It has become the acknowledged center for meteorological information on the continent; it has succeeded in connecting itself with the meteorological work of the world. It maintains a system of exchanges valuable and interesting at once to those who send and who receive, more extensive, prompt, and regular than would have been possible for the service without the aid of military organization for its members and the independent power of regulation and control which accompanies it. Co-operation wherever sought has been cordial and courteous.

The preparation of statistics and reports upon special requests for the uses of individuals or institutions and journals which wish to publish is a work of magnitude. The numerous applications for information on various subjects, many of them only indirectly connected with the duties of the office, require of themselves much attention. Requests for consolidated data or the discussion of meteorological facts, requiring compliance days of labor, are made at times apparently without thought of how much has been asked for. It has been the rule of the office to furnish whatever has been in its power whenever it has been considered to be for the public benefit. Paper 7.

The work in the property division of the office is carefully systematized. It has become extensive with the increasing duties of the service. To meet, as it was hoped, the views of Congress, an economy almost parsimonious has been practiced. The shrinkage of values everywhere has permitted a reduction of outlays, without which the continuation of the work of the office in its present scope would, with the appropriations now available, have been impracticable. The management and the accounting for the sums appropriated for the official telegraphic lines of the United States, the uses of which are, by law, in part for commercial purposes, as well as for the especial duties of this office, and for the

conduct of military affairs, has become a work involving time, care, and responsibility.

A number of useful maps and charts have been prepared in the map-room of the office. The work of this room, offering, as it does, in synoptic view, and at a glance, the results had from thousands of observations extended over years of labor, and condensed, after careful consideration, into the lines of the charting, becomes yearly, with the lapse of time, more valuable for the studies daily necessary. A glance at the chart exhibits to the student what else could be known only by the personal experience of years. It is desirable to increase the force employed and the work of the room, systematizing, in this way, the series of generalizations established by the duties of the service. A number of clerks are constantly employed in the computations necessary to fix these generalizations. On the success of this duty will rest much of the permanent advance to be hoped for.

One hundred and seventy-one dollars and twelve cents have been received during the year ending June 30, 1879, from the sale of maps and other office publications, in accordance with the act of Congress approved March 3, 1874, authorizing such sale.

The many inquiries received at this office as to the manner in which the publications of the office may be procured indicate the want of a general knowledge of the fact that the sale of copies of any or all of its publications, or of any map or papers regularly issued by it, is authorized by law to be made to any applicant upon the payment of the actual cost to the United States of the paper or publication sought for. Valuable data of the office are always procurable in this way, for the study of any sufficiently interested in the subject to which the papers have reference, by paying the very moderate cost of paper and printing.

Five hundred and eighty-four meteorological instruments have been purchased for station use, and five hundred and forty-two have been issued during the year ending June 30, 1879.

The artisans' work in the instrument and repair shop of the office has steadily increased in amount with the increased distribution of instruments and the number of stations. A number of meteorological instruments, made after original designs, have been here manufactured, to be tested in the office as to their value for practical use or for the purposes of distribution.

The practice of sending instruments by mail, in the charge of postal agents, under the special arrangement for this purpose made with the Postmaster-General, has continued to be successful, and is of material benefit to the office. The superintendent of the railway mail service and his assistants of the Post-Office Department, as well as the agents of that department generally, have rendered careful and energetic aid in this transportation. Such aid is important to a service now ramifying into every portion of the United States.

It is by the aid of the postal agents and the facilities had through them for the conveyance of instruments over their routes that the wide distribution of meteorological apparatus, rendered necessary on seas and continents by the plans of observation and study now adopted, has become possible, and will be maintained.

A considerable number of instruments, anemometers, hygrometers, water-thermometers, rain-gauges, &c., have been issued to the Chief of the Bureau of Navigation of the Navy Department for use on vessels of the United States Navy in making, in co-operation with this office, the naval series of simultaneous observations directed by the honorable Secretary of the Navy in G. O. No. 220, dated December 25, 1876. This office supplies, upon proper application and receipt, any instruments re-

ired for this purpose. Reports of naval observations transmitted to this office are entered on the international bulletin and are charted upon the international weather charts.

A number of instruments have been furnished for temporary use on vessels of the commercial marine engaged in similar co-operation upon a marine series of observations.

The library of the office now contains four thousand one hundred and eighty-nine bound volumes and eight hundred and twenty-two pamphlets, being an increase since the date of the last annual report of three hundred and twenty-eight bound volumes and eighty-two pamphlets.

These works have been carefully catalogued, and are filed for ready reference. The list comprises a useful and extensive collection for meteorological research, with other works relating to the several duties of the service. Copies of some of the volumes are not to be found elsewhere, and are especially valuable. A number of important works have been obtained, without cost to the United States, from foreign societies and associations, in courteous exchange for the publications of the office. (Paper 8.)

The total number of stations of observations in operation June 30th, 1879, within the territory of the United States and maintained for the Signal Service, was two hundred and twenty-nine, including those upon the telegraph lines in charge of this office, and the special river and sun-t stations, from which reports are regularly received. Reports are also received from eighteen additional stations established by the authorities of the Dominion of Canada, also from one at St. John's, N. F., and one at York Factory, B. A. Telegraphic reports have been regularly received throughout the year from one and mail reports from two stations located in the West India Islands, and during a portion of the year telegraphic reports from five and mail reports from three others. The number of stations from which telegraphic reports are received at this office tri-daily is one hundred and thirty-three; the number from which one telegraphic report only is received daily is twenty-five, and from which no telegraphic reports are received daily is one; making the total number of separate points from which telegraphic reports are received daily one hundred and fifty-nine.

The sums expended for the service secure for the United States not only the reports from the officially established station, but incidentally those had from the additional stations, to which reference is made elsewhere.

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A portion of the meteorological statistics for the year ending June 30, 1879, as had from the regular reporting stations and collated, are given in detail in papers nine to sixteen.

One hundred and seventy-nine stations, including those upon the telegraph lines in the interior, in charge of the Signal Corps, have been inspected during the year ending June 30, 1879. Paper 17 shows the name of each station inspected, with the date of inspection. A number of officers are kept continually on duty as inspectors, and arriving at the stations without previous notice given, critically examine and report upon all facts in relation to it.

The instructions under which inspectors act and the character of the reports made by them are exhibited in paper 18, herewith.

The average cost of maintaining each full station of observation during the year ending June 30, 1879, exclusive of the cost of telegraphing reports and the pay and maintenance of the enlisted men on duty at each, has been \$389.90. A number of new stations have been established.

In the cost of each station, as here given, is included the cost of

and rent of maintaining a suitable office or room at each place for the public use, with facilities for the necessary exposure of instruments and for the display of cautionary signals when such signals are required.

The duties of the enlisted men at each station were fully described in the last annual report, as follows:

At stations forwarding telegraphic reports they are required to take, put in cipher, and furnish, to be telegraphed tri-daily on each day, at different fixed times, the results of observations made at those times, and embracing, in each case, the readings of the barometer, the thermometer, the wind velocity and direction, the rain-gauge, the relative humidity, the character, quality, and movement of upper and lower clouds, and the condition of the weather. These observations are taken at such hours, at the different stations, as to provide the three simultaneous observations taken daily at three fixed moments of physical time throughout the whole extent of the territory of the United States. These times, fixed since November 1, 1870, at the hours 7.35 a. m., 4.35 p. m., and 11 p. m., Washington mean time, were changed on November 1, 1879, to be at the hours 7 a. m., 3 p. m., and 11 p. m., Washington, mean time. The differences of time at the different stations cause it to happen that at some stations the observations are made in the earliest hours in the morning and at others in the latest of the night. The work thus practically extends, the differences of time at the different stations being taken into consideration, throughout the twenty-four hours. Each of these observations is required to be carefully recorded in writing, for future reference, at the time it is taken. Three other observations to be taken at the local times, 7 a. m., 2 p. m., and 9 p. m., at the different stations are made and recorded at each station. A seventh and especial observation is taken and recorded at noon on each day. If at this observation such instrumental changes are noted as to cause anxiety, the fact is to be telegraphed to the central office at Washington.

An eighth observation is required to be taken at the exact hour of sunset at each station. This observation, embracing the appearance of the western sky, the direction of the wind, the amount of cloudiness—the readings of the barometer, thermometer, and hygrometer, and amount of rain-fall since last preceding report, is reported with the midnight report.

At the stations at which cautionary signals are displayed an observer must be constantly on duty to receive the order and to show the signal, which may be ordered at any moment. At stations from which river reports are furnished, an observation and record of the depth and temperature of the water is made and reported at a fixed hour on each day. In cases of threatening storms or dangerous freshets, any station may be called upon to make hourly reports. In cases of violent storms, reports are sometimes required to be made hourly throughout the night.

The data thus gathered on the files at each station are to be consolidated, first weekly, on forms which, with copies of the telegraphic cipher reports, are to be sent weekly to the central office, then monthly, in the form of a careful digest, also to be forwarded. The thorough study of the work of the month is then to be condensed in the form of a monthly chart. Paper 19. None of these observations or records ought to be dispensed with; nor can they, with meteorological instruments as they now exist, be taken and recorded more economically. At stations where the population warrants it the duties of the enlisted men are increased by the receipt and record of data from other stations, to be exhibited upon written bulletins or furnished to the press for public use. In the great cities there are the further duties of the display, at the rooms of

boards of trade, chambers of commerce, and other similar places, of maps on which the meteoric conditions are shown by symbols, changeable daily.

There are to be prepared and posted also by the enlisted men, at these stations, bulletins of the storm-warning orders as received from the central office, on which appear very frequently, in addition to the order, brief notes as to the force of the anticipated storm, the direction in which it may be moving, the names of places menaced, though storm-signals have not yet been ordered at them, and other items of information, all of which require to be carefully copied and posted with quick dispatch.

In cases of disasters occurring on the lakes or sea-coasts, full information concerning which is often in possession of the service, or in the instance of any matter of public interest coming within the scope of the duties of the service, the station force is required to exhibit bulletins containing in detail full reports.

The local offices of the Signal Service are always places of resort for inquiry on the part of those desiring to be informed what changes of weather have been particularly noticed, or are likely to affect the various industries in which the populations are engaged.

In the cities upon the sea-coast of the United States, or at the lake ports, the offices of the service are open for the comparison of instruments to obtain special instrumental readings; to make examinations of the same, or to furnish whatever information may be practicable to captains of vessels or others concerned in shipping interests. At stations upon telegraphic lines in charge of or constructed by the service in pursuance of the furtherance of its duties, the ordinary duties of telegraphing and the maintenance of the lines devolve upon the force there stationed, in addition to the duties of observation.

The cautionary signal flag is always, when flown officially, an invitation to mariners or others interested to visit the offices for information. The courtesies and duties of the office are not limited to the people of the United States alone, but are tendered freely to the people of any nation who may be within our borders.

The distribution of Farmers' Bulletins for the uses of agricultural populations has been frequently and is elsewhere described.

The forms exhibiting, condensed, the labor thus required of the Signal Service men stationed at separate stations, and the instructions under which the separate observations and reports are made, are herewith described. (Paper 20.)

In times of especial emergencies or danger of any kind threatening any separate States or the United States, the different stations make, by letter and in cipher by telegraph, regular reports upon any subject under the attention of superior authorities.

The enlisted men in charge of stations are responsible for the care, cleanliness, and good-working of the instruments; the clearness of the records; the correctness and punctuality of the reports; display of signals or bulletins, and, in fine, for the conduct and good condition of the station itself. It has been considered necessary to make this description thus minute that it might be understood what duties are required of the non-commissioned officers and privates of the Signal Corps in addition to the military duties heretofore referred to, and that it may be comprehended that the force must consist of men of more than ordinary acquirements to be competent for such duties.

The sum of the pay and allowances of these soldiers comprehends every allowance which is permitted the soldier, to house, feed and clothe himself, to meet in full every expense of his maintenance wherever in

the wide extent of the territories of the United States the vicissitudes of the service may call him. It must be borne in mind that as a soldier he can have no home, and that he must purchase anew, with every change of station, the little comforts which homes gather around them. The regular tour of duty permits service on each station for two years only. These soldiers are liable to all a soldier's duties. On the occurrence of serious disturbances, the armed detachments of the corps are, with its officers, in readiness, wherever they may be, for service at a moment's warning. In the service upon the frontier, they are exposed in their duties of the construction, repair, and maintenance of telegraph lines, or whenever they may accompany expeditions, to the dangers of the field.

In times of dangerous pestilence these soldiers are by their duties more exposed than other forces of the Army. Other forces may be moved for sanitary reasons to places of comparative safety. The exigences of the service and the need that regular series of data should be had, by observations, on which to base precautions against existing epidemics for the time, and for the study of them thereafter, have required that the enlisted men of the service should remain faithfully at their posts during some of the worst visitations of disease which have devastated the country. As a rule they have done so without a murmur.

In the districts scourged by yellow fever in the year just passed Sergeants George H. Rohé, J. A. Cody, E. Van Dyk and W. U. Simons, and first-class privates F. M. Neal, D. T. Flannery and J. A. Barry, Signal Corps, U. S. A., remained bravely at their posts in the steady and faithful discharge of their allotted duties. The office files show no murmur of complaint on their part. It is a grateful duty to record such fidelity.

It has been considered that as the United States have, as above rehearsed in the case of the body of men constituting the Signal Corps, the military services of a force trained and competent to act as armed soldiers when there is need, there is in effect secured by the duties other than armed duties on which these men are employed, the benefits of all the special services rendered by the corps at stations of meteorological observations and report, at cautionary signal stations, at stations on telegraphic lines, at sea-coast stations and elsewhere, with little compensation to the men, or cost beyond that of any other merely military force, equal in number, to the public.

The work of a constant watchfulness for the whole territory of the United States, and a plan of observation and report extending by its different branches around the northern hemisphere, is had through the service in the Signal Corps of one hundred and fifty sergeants, thirty corporals, and two hundred and seventy privates.

It is needless with such facts in view, and after nineteen years of continuous service, to reiterate the advantages secured to the Signal Service by its military organization. Service under military organizations is that form of a permanent civil service of disciplined citizens in which the duties are compulsory for the term of the service, and a proper discharge of them can be enforced by punishment. The experience of centuries has proven that whenever tasks covering in their reach the extent of nations, and involving in their execution interests of life and property, are to be undertaken, men have sought, as if by instinct, for faithful co-operation and prompt action through the regular control and sure reward or punishment which attend the military system. The soldiers of the United States are simply its citizens, held under what ought to be wise rules and regulations to duties which they have voluntarily accepted.

The duties of an army in time of peace have been defined as properly limited in their exercise to those of a police for the nation. It is considered that those rendered by the Signal Service have demonstrated that the men carried upon its rolls have been able to perform these duties and others requiring a higher standard of attainment, and rendering a better equivalent for the necessary cost. They have not failed to be ready to act armed upon any intimation that there was need of such readiness.

The duties of the force stationed at the office of the Chief Signal Officer, at the War Department, are many and onerous. In rendering these duties it ought to be borne in mind that they are continued day and night without cessation for holidays or days of rest. There is no single day of the year in which the work is suspended. It must of necessity and for this reason be performed by details of men who relieve each other at fixed times. The total force employed at this office numbers one hundred and nine enlisted men.

In estimating the numbers required to be present for duty, it is difficult to make a comparison between an establishment thus conducted and others in which the work is limited to certain hours of daylight only. This office is the center to which the daily and nightly, weekly and monthly contributions of all other offices or stations of the Signal Service scattered throughout the United States tend to be daily condensed, and finally elaborated and made of practical value. There are here concentrated, also, the reports from the six hundred and twenty-nine places at which voluntary reports of daily observations are now made on this continent, and from the three hundred and twelve locations in foreign countries from which reports of daily simultaneous observations are had. From the great mass of data thus collected, and which enhances each year in value, are continuously elaborated the results which appear in the different issues of the office, whether in the form of forecasts telegraphed to the press throughout the country, of charts or bulletins distributed hence, of generalizations announced as apparent, of cautionary signal orders, or the weekly and monthly publications. No single report of any observation received at the office fails to receive attention or study.

It is at this office that are had the management and supervision of telegraphic lines, erected and now worked by the United States, upon the Indian frontier and in the States and Territories of the interior. The wires of the coast lines have here their terminal connection, and here concentrates the labor of the different coast stations. Upon this office devolves, and with each year to an increasing extent, the duty of transmission of many and important messages from superior authorities to and from distant posts and parts of the United States, for the safe delivery and proper guarding of which, by cipher, if need be, this office is responsible. The rooms of the telegraphic department are never closed or left without an operator. The brief narration possible in a report of this character can convey but little idea of the various and incessant labors incident to such an establishment.

A regular exchange of telegraphic reports now had for a number of years by comity of exchange with the chief meteorological office of the Dominion of Canada has been maintained. Meteorological reports of observations taken simultaneously, and furnished according to the form of this office, have been received tri-daily from twelve stations within the Dominion, and warnings have been regularly transmitted to the meteorological office of the Dominion at Toronto, as affording material on which to base the display of signals to be exhibited at ports of the

Dominion at times of threatening danger. The telegraphic reports of observations received from twenty-six Signal Service stations of the United States have been furnished tri-daily to the agent of the Dominion office at Buffalo, New York. The relations thus maintained between the two services continue to be of service to both.

While this office has been prepared to co-operate in this manner with any foreign office, and to the limit of its power, in the furnishing of material for study, by the use of its consolidated reports or by especial warnings, it is not authorized by law to co-operate with any institution or party for the publication or display of any forecasts, indications, or cautionary signals not emanating from this bureau, or so controlled by it as not to conflict or confuse those hence issued for the Territories of the United States, the lakes, rivers, or coasts in or bordering upon them.

In view of the increased appropriation made available by the action of the Congress at the last session, the series of telegraphic reports from stations in the West Indies, extending from Cuba, by Jamaica, to Barbadoes and the Windward Islands, have been partially resumed, two reports of observation being had on each day from each station during what is known as the hurricane season. Constantly recurring difficulties attend the collection of reports from these stations. The defective working of the telegraphic cables has frequently impaired the value of reports had from them by delay. It is difficult to secure the services of skilled observers or to obtain instrumental readings which at all accord with those at the regular stations. The crude reports are, however, at times useful.

The network of the Signal Service stations extends now on this continent to both the Atlantic and Pacific coasts, and over the intervening territory of the United States. The work of the stations has been rendered utilizable for the daily provision of meteoric changes to occur over this whole geographical extent, including the great interior plateau. While the stations are in some districts far too widely separated, the gaps are closing each year with steady progress. The service now has its stations located in continuous lines along the northern frontier of the United States from Maine to west of Lake Superior; along the Atlantic coast; along the southern or Gulf coast; along the southwestern boundary, separating the United States from Mexico, to the Pacific ocean; thence northerly along the Pacific coast to British North America, and at selected points throughout the whole interior within these boundary lines. A continuous telegraphic line to follow, with near proximity, the line by which the United States, bound on British North America, from the Pacific ocean to Lake Superior, mentioned in former reports as something to be hoped for and needed to properly complete the northern line of the circuit of stations, may be considered as now nearly completed by the lines this summer erected in the Northwest under appropriations by Congress. It is probable that before the conclusion of another year telegraphic communication will exist along the northern frontier of the United States from the Atlantic ocean to the Pacific. This line forming the second transcontinental line carried by the labor of the Signal Corps across the continent. As other and new telegraphic lines extend within the boundary lines above referred to, they will make possible the establishment of other and much needed interior stations. The experience of years has reduced the matter of opening, equipping, and rapidly utilizing a station to a system.

The meteorological work of the United States keeps pace everywhere with the telegraphic construction. In the hands, and under the management, of a single corps, the two duties are necessarily co-extensive.

The following list exhibits the stations as classified and located in States and Territories on June 30, 1879:

Alabama.—Decatur**, Mobile*, Montgomery*. *Alaska.*—Attn*, Fort Saint Michaels*, Atka*, Saint Paul's Island*, Unalaska*. *Arizona.*—Apache Pass†, Burkes*, Fort Apache*, Fort Goodwin†, Florence*, Fort Verde*, Phoenix*, Prescott*, Fort Grant*, Tres Alamos†, Tucson*, Wickensburg*, Yuma*. *Arkansas.*—Fort Smith**, Helena**, Little Rock**. *British Columbia.*—Lytton†, New Westminster†, Victoria†. *California.*—Colusa**, Folsom City**, Marysville**, Orville**, Los Angeles*, Red Bluff*, Sacramento*, San Diego*, San Francisco*, Visalia*, Campo*, Monterey†, Santa Barbara†, Yreka†. *Colorado.*—Denver*, Pike's Peak*, Kit Carson†, Trinidad†. *Connecticut.*—New Haven*, New London*, Stonington†. *Dakota Territory.*—Bismarck*, Deadwood*, Fort Buford*, Fort Meade†, Knife River†, Pembina*, Yankton*, Fort Stevenson*. *Delaware.*—Lewes†. *District of Columbia.*—Washington*. *Florida.*—Jacksonville*, Key West*, Pensacola†, Punta Rasa*, Saint Marks*. *Georgia.*—Atlanta*, Augusta*, Savannah*, Tybee Island†. *Idaho Territory.*—Boise City*. *Illinois.*—Cairo*, Chicago*, Warsaw**. *Indiana.*—Evansville**, Logansport†, Indianapolis*. *Indian Territory.*—Fort Gibson*, Fort Sill*. *Iowa.*—Burlington†, Davenport*, Dubuque*, Keokuk*, Des Moines*, Le Claire**, Muscatine**. *Kansas.*—Dodge City*, Emporia†, Leavenworth*, Watervillet. *Kentucky.*—Louisville*, Paducah**. *Louisiana.*—New Orleans*, Port Eads†, Shreveport*. *Maine.*—Bangor†, Booth Bay†, Deer Isle†, Eastport*, Portland*, Rockland†. *Maryland.*—Baltimore*. *Massachusetts.*—Boston*, Chatham†, Highland Light†, Hyannis†, Gloucester†, Marblehead†, New Bedford†, Newburyport†, Springfield*, Thatcher's Island*, Wood's Holl*. *Michigan.*—Alpena*, Bay City†, Detroit*, East Tawas†, Escanaba*, Grand Haven*, Forester†, Frankfort†, Ludington†, Marquette*, Menomonee†, Mackinac City†, Monroe†, Muskegon†, Northport†, Pentwater†, Port Huron*, Port Austin†, Roger's City†, Sault de Ste. Marie†, Saint Joseph†, South Haven†, Traverse City†. *Minnesota.*—Breckenridge*, Duluth*, Saint Paul*, Wadena†. *Mississippi.*—Vicksburg*. *Missouri.*—Boonville**, Branswick**, Hermann**, Jefferson City**, Kansas City**, Lexington**, Saint Joseph**, Saint Louis*. *Montana Territory.*—Fort Custer†, Fort Keogh*, Fort Ellis†, Hunter's Springs†, Little Missouri†, Morgan and O'Brien's Ranch†, Stillwater†, Virginia City*. *Nebraska.*—North Platte*, Omaha*, Plattsmouth**, Central City†, Sidney†. *Nevada.*—Austin†, Hamilton†, Pioche*, Winnemucca*. *New Hampshire.*—Mount Washington*, Portsmouth†. *New Jersey.*—Atlantic City*, Barnegat*, Cape May*, Little Egg Harbor†, Sandy Hook*. *New York.*—Albany*, Buffalo*, Cape Vincent†, Charlotte†, City Island†, Dunkirk†, New York*, Rochester*, Oswego*, Elmira†. *New Mexico.*—Albuquerque*, Aleman†, Bernalillo†, Belen†, La Mesilla*, Los Lunas†, Las Cruces†, Santa Fé*, Silver City*, Fort Bayard†, Socorro*. *North Carolina.*—Cape Hatteras*, Cape Lookout*, Flying Station No. 5†, Flying Station at Sloop Point†, Fort Macon†, Kittyhawk*, New River Inlet†, Portsmouth*, Smithville*, Wilmington*. *Ohio.*—Cincinnati*, Cleveland*, Columbus*, Ashtabul Harbor†, Fairport†, Marietta**, Sandusky*, Toledo*. *Ontario, Canada.*—Pembroke†. *Oregon.*—Albany**, Eugene City**, Portland*, Roseburg*, Umatilla*. *Pennsylvania.*—Brownsville**, Confluence**, Freeport**, New Geneva**, Oil City**, Erie*, Philadelphia*, Pittsburgh*. *Rhode Island.*—Newport*. *South Carolina.*—Charleston*. *Tennessee.*—Chattanooga*, Johnsonville*, Knoxville*, Memphis*, Nashville*. *Texas.*—

* Stations of first class. † Sunset stations. ‡ Display stations only. § Repair stations. ¶ Telegraph and sunset stations. ¶ Printing stations. ** Special river stations.

es without such indications of their existence and of their line of movement as well-managed stations among these islands would detect and announce. The possibility of protection will be increased and extended to more northern coasts whenever telegraphic communication be had with the Bermuda Islands.

The attention of the office has continued to be directed, as in preceding years, to the solution of the difficult question as to the best mode which to compare, for the purposes of the necessary daily studies, observations of atmospheric changes taking place upon the Pacific coast, near the sea-level, and upon the great elevated plateau of the interior, with the reports of observations had at the same time on the east-slope of the Rocky Mountains, and extended to the Gulf and Atlantic coasts at the sea-level. Progress is made in this direction. It is not difficult to extend several of the office charts from the Pacific to the Atlantic coasts at the time of each tri-daily report, with the lines of charting in so far accurate as to afford valuable suggestions as to changes approaching.

The spread of civilization over the great interior plateau west of the Mississippi each year renders more extended observations practicable in that region.

The field of study has been pushed in that direction as rapidly as the means at the disposal of the office have permitted. The barometrical readings made in this section still lose part of their value by the difficulty of reduction to the hypothetical readings at sea-level. There seems, nevertheless, reason to hope that the unreduced readings can be utilized for purposes to which the reduced only have been hitherto applied. It is, perhaps, by multiplying stations and continuing the comparison of observations had at them, the correct solutions of all problems will be more rapidly attained.

The studies made this year in the matter of the hypothetical reductions to sea-level give reason to hope that processes have suggested themselves by which the hypothetical barometric readings referred to may be arrived at with sufficient accuracy for any practical purposes of meteorological charting.

The increased knowledge had enables improvements to be made each year in the modes of digesting the masses of observations received upon the records, and suggests each year better methods of study to attain the accuracy of prediction which is constantly sought.

It is in consideration to equip the station upon the summit of Pike's Peak, at an elevation of 14,150 feet, with instruments for the study of solar observations, and in particular of those to be made at sunset, to determine, if possible, what connection there may be between conditions then observed and meteorological changes which follow. Instruments for this purpose are now in preparation. In this work the office has had, and still has, the zealous co-operation of its distinguished co-laborer, J. M. Lockyear, F. R. S. These series of observations will become more valuable with each year. It is to be hoped facts leading to important improvements in meteorological study will be established.

The long-felt need of carefully studying the changes occurring upon the interior plateau led to the establishment, prior to the date of the last annual report, of a series of observations had at what are known as "sunset" stations. This series has been continued during the year just closed with good results. The circular (paper 21) sufficiently describes the duties of the employed observers at these stations and the character of the report to be had from them. Some of these observations are especially spectroscopic, the sunset report being based in part on such

at several ports or in the interior, give reliable information as to the circumstances under which coasting voyages may be taken or are being made. The benefits to follow a seacoast service, with its stations properly prepared and equipped are such as cause it to be hoped that all the exposed and frequented coasts of the United States may early have the advantage of such protection.

It is considered to have been demonstrated that by the services of single seacoast stations there has been saved, at different times, property amounting in value to more than the cost of manning and maintaining all the stations from the dates at which they were first put in operation. Improving modes of communication promise as possible such close connection between the stations that it seems practicable to so arrange that there need be no points upon our coasts but to which aid can be immediately summoned and none but from which summons for aid can go, if need be, to naval stations, posts, and cities.

Since the date of the last annual report the use at the seacoast stations of telegraphic gongs connected by wire, after the manner of those used for fire-alarms, and intended to be operated from any point upon the coast at which telegraphic communication exists, or may be temporarily established for the purpose of calling the attention of any stations, has been continued. Gongs to be operated in this way are located in the offices at Norfolk, Cape May, Thatcher's Island, Kittyhawk, and the central office, in this city.

The stations on the telegraphic lines, constructed in pursuance of acts of Congress on the Indian and Mexican frontiers and in the Northwest for the better protection of frontier populations, together with those for the purpose of connecting military posts and stations, serve better each other, the ends for which, in part, the lines were first recommended—that of extending the fields of meteorological study over regions so sparsely settled as to be almost beyond the limits of civilization.

They have made possible the daily receipt of meteorological data from regions in which the collection of such data had been before considered impracticable. They have furnished for the office a daily knowledge of the atmospheric conditions existing along the whole course of the wires. The value of these reports, completing as they now do both the southern and the northern lines of the whole system of reports established for the territory of the United States, is very great. The lines make practicable also the receipt at the regular telegraphic stations of reports from regions in the interior of the country near them which, both at the North and at the South, have been but recently explored, and from which every reported observation is of value. The near completion of lines similarly constructed and managed for similar purposes in proximity to, and following the general direction of, our northwestern frontier, from the station at Bismarck toward stations in Idaho and on the Pacific, preshadows the best results for the interests of this especial service, and for the protection and development of that portion of our territory.

The events of the past year have illustrated what might be the uses of such lines in Indian wars. They make safer the settlement of the country. They make possible the establishment of stations valuable for meteorological reports.

Telegraphic reports from the eastern Mexican coast (the western coast of the Mexican Gulf) are still to be desired for the proper protection of the shipping in the Gulf and of the Gulf coasts of the United States. Cyclones moving over the West Indies, and thence pursuing a course over the Gulf of Mexico, would doubtless often manifest themselves on or near the coast of Mexico in time to permit warnings to be thence given

1 Observatory at Athens; India, by H. F. Blanford, Meteorological Reporter to the Government of India; Italy, by His Excellency the Minister of Public Instruction, and the respective observers; Japan, by Kaii, Director of the Imperial Meteorological Observatory at Tokyo, the Imperial University of Tokyo; Mexico, by Señor Mariano Barba, Director of the Central Meteorological Observatory in the City of Mexico, and the respective observers; Netherlands, by Professor Buys Ballot, Director of the Royal Meteorological Institute of the Netherlands at Utrecht; Norway, by Professor H. Mohr, Director of the Royal Norwegian Meteorological Institute at Christiania; Portugal, by J. C. de Capello, Director of the Meteorological Observatory of the Infante Luiz at Lisbon, and the respective observers; Russia, by Professor Wild, Director of the Imperial Central Physical Observatory of Russia at St. Petersburg; Spain, by Antonio Aguilar, Director of the Royal Observatory at Madrid, and the respective observers; Sweden, by Prof. Ahlström, Director of the Royal Swedish Meteorological Institute at Stockholm, and by Dr. H. H. Hildebrandsson, Director of the Meteorological Division of the Upsala Observatory; Switzerland, by Prof. R. Wolf, Director of the Observatory at Zurich, and by Prof. E. Plantamour, Director of the Observatory at Geneva; Turkey, by A. Combarry, Effendi, Director of the Central Observatory at Constantinople, and by Prof. C. J. Van Dyck, Superintendent of the Leas Observatory at Beirut; Canada, by Prof. G. T. Kingston, Director of the Magnetic Observatory at Toronto, and Superintendent of the Meteorological Office of the Dominion of Canada, and the respective observers; the United States Navy, through the Navy Department, through Commodore W. D. Whiting, U. S. N., Chief of the Bureau of Navigation; and by individual observers at other ports.

A large number of observations taken on vessels at sea to complement the simultaneous reports of this service, and at the request of this office, have been received on the form provided for the purpose. (Paper 22.) The vessels furnishing their reports belong to the commercial marines of different nations. The utility of the reports is evident in the study of storms approaching our coasts or which endanger vessels sailing from our ports.

The co-operation of the Navy of the United States in the taking of simultaneous observations simultaneously and in accordance with the system adopted by this office wherever naval vessels of the United States may be, as authorized by the general order of the Secretary of the Navy, dated November 25, 1876, has largely increased the data of this class. This co-operation has been skillfully rendered by the Navy Department and United States Navy, through the commanders and officers of vessels, and the Chief of the Bureau of Navigation.

The people of the United States are thus the first nation whose Army and Navy co-operate, as all armies and navies should, under official orders, in the taking of simultaneous observations wherever the forces may be. This co-operation has now existed for nearly three years.

In view of the accomplished establishment of the system of simultaneous reports to be recorded and made at sea by the vessels of the naval and commercial marines of the United States and of other nations, and in order to provide for the extension of the system, carefully tested barometers of the best make have been prepared and kept located, as standards, at the ports of New York and San Francisco. These instruments have been in use for reference; that at New York since 1877, that at San Francisco since December 1, 1878.

These barometers are publicly located and displayed to afford means

James A. Wright; and the Allan Line, through its agents, A. Schurr & Co.

United States bear, in the cases of all maritime observers co-operating in this system, all expenses for forms, postages, &c., when so ordered, and not infrequently, and, when necessary, loan the required equipments.

number of observations made daily on separate vessels at sea is hundred and twenty-two. (Paper 24.)

Research has already gone far enough to indicate the paths by which, cannot be directly predicted, it can at least be studied, to learn sequences to follow conditions reported on or near the eastern coast of Asia, or on the Pacific, will be found on our western coasts.

Similar studies will have reference to our own southern and eastern coasts, and to the western coasts of the European continent. The time is not far distant when vessels leaving any Atlantic port may be warned whether any notable disturbance exists at sea and when it is about to threaten the voyage.

The establishment of permanent ocean stations in lines traversing the globe over or near the telegraphic cables, and in telegraphic communication with either continent, is not considered impracticable and has been referred to in preceding reports.

Since the date of the last annual report this matter has been especially illustrated in the instance of the cable-laying steamship *Faraday*, engaged in laying an electric cable between France and the United States, and holding on to the cable, found herself in the course of a cyclone which passed directly over the vessel without causing her to lose sight of the cable, and which was at once reported by telegraph from the cable from the vessel to the European continent, the report giving wind changes and velocity, and the barometric changes occurring in different quadrants of the cyclone passed over the vessel. The practical demonstration seems complete.

There is reason to hope that a progress has been made which will result from the study of practical international meteorology some of the difficulties hitherto encountered.

There are grounds to hope also that the atmospheric conditions and changes of condition can be charted with sufficient accuracy over any part of the earth's surface. If the hope has fruition, meteorological dangers will, as against study, cease to exist.

July 1, 1875, the daily issue of a printed bulletin, exhibiting the international simultaneous reports, was commenced at this office, and has since been maintained. A copy of this bulletin is furnished, without charge, to each co-operating observer. The results to be had from the reports thus collated are considered to be of especial importance. The bulletin combines, for the first time of which there is record, the labors of many nations in a work of this kind for their mutual benefit. There is needed only the assistance to be had from the naval forces of the different powers (that of the navies of the United States, of Portugal and France being already given) to extend the plan of report upon the globe so as to bring more fully within the scope of study observations practically extending around the northern hemisphere.

A copy of the International Bulletin herewith (Paper 25) exhibits the character of the international reports, and that of the information had from each station. The chart accompanying this bulletin shows as far as practicable the location of the stations, and foreshadows the way in which the reports had from them will make practicable. The number of stations reporting increases.

While the stations are crowded in some localities, each is useful—each serving to check the work of the other, and each aiding to close the gaps the failure of other stations might sometimes cause. The work is not likely to be abandoned by those in the different countries who have taken part in establishing it and who share its benefits. If it served no other purpose than to maintain, as it does, the pleasant co-operation of those charged with the meteorological duties of the different countries, it would be of value. It is hoped that by systems of observations thus extensive, generalizations may be had to permit the announcement of meteoric changes for periods longer in advance than have been hitherto practicable.

The average number of daily simultaneous observations now made in foreign countries is three hundred and fifty-seven. The total number of stations on land and on vessels at sea from which reports are entered in the bulletin regularly is five hundred and twenty-seven. The co-operation of the different nations secured by this plan of exchange has rendered the additional cost to the United States of the grand system of reports it makes possible but little more than that of the cost of the preparation, paper, and binding of the International Bulletin and the accompanying charts, a cost which would have to be met in great part for the proper preservation of the records themselves even if the bulletins were not distributed.

On July 1, 1878, it became possible to commence the issue, on that date, of a daily international weather map, charted daily and issued daily, each chart based upon the data appearing upon the International Bulletin of simultaneous reports of similar date. The charting extends around the world, and embraces for its area the whole northern hemisphere.

The daily issue of a chart of his kind, thus daily issued for the first time by the United States, was without a precedent in history. It exhibited the co-operation, for a single purpose, of the civilized powers of the world north of the equator.

The studies which such charts make possible, the improvements which will come to the charts as the work progresses and the area of the chart is better filled with reports of observations carefully elaborated, are appreciated by scientific men. The questions as to the translation of storms from continent to continent, and of the times and directions they may take in such movements; the movement of areas of high and low barometer; the conditions of temperature, pressure, and wind-direction existing around the earth at a fixed instant of time; the distribution and amount of rain-fall, and other studies, many and valuable, only suggested by this enumeration, may be by such studies settled. It seems not impossible that in the future questions of climatology, and perhaps others bearing upon the prediction of weather changes far in advance of the time at which these changes may happen, or queries as to the character of coming seasons even, may be answered by the researches these charts will make practicable.

The very great aid the material furnished in this elaborate form gives to the search for generalizations, or for data in the support of theories, has been before referred to. In frequent cases, little more than collation is necessary.

As a means of better combining the work and the interests of the several nations, of certainly securing that co-operation at sea which will enable the lines of the charting to be drawn as fully and as well over oceans as over continents, and which will give the world ultimately a knowledge as practical of the movement of areas of disturbance in the

midst of the seas as is now had of such movement on some continents, the undertaking is of much importance.

It is an advantage of the charting draughted from simultaneous reports that studies by normals, not possible in any other way, may be had. The normal pressure, temperature, &c., arrived at from observations taken at any one place, and the same and a fixed instant of time every day, become established as to that place and time with accuracy. Many causes of error are eliminated.

The intercomparison of these normals with the normals taken at other places simultaneously with the first and under the similar conditions that the normals to be found for those places are to be from observations taken at those places at a fixed time and on every day, gives results reliable and differing from those to be had by the use of normal readings arrived at in any other manner. Normals for the year, for the season, and for the month may be determined by such procedure. The comparison of such normals will show in the case of abnormal changes in any district or section whether and how these changes are compensated by compensating variations elsewhere. There are interesting studies as to what sequences there may be to follow such atmospheric variations occurring over any region or country—either in that region or country or elsewhere—and how and where the compensating variations occur, and with what concomitants or sequences of meteoric changes.

There is the hope to gain in this way or by studies such study will suggest information to affect the commercial and agricultural interests of the world.

By observations spoken of as simultaneous observations, there is meant, in the parlance of this office, observations actually taken simultaneously with reference to physical time. The readings for observations of this character, made at different stations, no matter how widely separated, are attempted to be so made that they will be in effect made together; that is, that the different observers at the different stations will each be at his separate instruments, reading them for the observation at the same moment that each and all of the other observers are at their separate instruments for the purpose of making the same observations.

In the case, for instance, of an observation or series of observations to be made at Tokio, San Francisco, New York, London, St. Petersburg, and Calcutta, the observers at each of the stations named—and the list might be prolonged indefinitely—are so instructed that at each station, and at the moment fixed for the observation, an observer would be found at the instruments taking the proper readings. So rigidly is this plan followed throughout the United States, that not only are the instruments required to be read at the different stations at that moment of physical time which has been fixed for all, but the instruments are required to be read in a certain and fixed order or sequence.

The observations are thus made, in fact, simultaneously, precisely as—in a supposable case—the different sets of instruments, instead of being scattered over the surface of the earth, had been gathered in a single room, and the observers then directed to read the different sets together, and at once, at a fixed moment of time. Observations of this character have no resemblance to those made at similar hours named, by local or clock time, at the different stations. Observations taken at similar hours of the local or clock time, at different stations, are, in effect, taken at very different hours of physical time, the differences increasing with the number of degrees of longitude intervening between the different stations. Thus, observations taken at Washington and San Francisco at the similar hours, 7 a. m., 2 p. m., and 9 p. m. of local time

at the two cities, would in fact be taken at Washington three hours and two minutes before the same observations would be taken at San Francisco. Observations of this character might very properly be styled synchronous, for they are so as to local time; they are not in any way simultaneous. The distinction ought to be very carefully made. Much confusion has entered meteorological writings because this distinction has not been rigidly observed. In some of the earliest works having reference to practical meteorology, there is mention of chartings based upon observations taken "simultaneously" at different stations, at 3 p. m., or other hours fixed by local time. The use of the words "simultaneous" and "synchronous" as synonyms is not yet abandoned.

Before the introduction of the electric telegraph it was difficult to conceive of observations to be taken simultaneously, and to be concentrated with sufficient rapidity for use for any practical purpose. On the very limited fields it was then possible to consider, for study, observations taken at the same hour of local time presented themselves in appearance as taken simultaneously. It seems to have fallen to this office to first establish, for purposes of forecast, systems of observation based upon the fact that the observations were to be actually taken simultaneously, and to have first so arranged telegraphic circuits connecting the different stations that the observations taken simultaneously should move simultaneously by wire to a given center—the central office. It is by simultaneous observations only that a true synopsis of the atmosphere over any extent of the earth's surface can be given; the atmosphere being so photographed, as it were, before any changes in its condition can have been caused by motion. It is a peculiarity of such charting that it is unlimited as to its extent, and improves for any purposes of meteorological study the greater the extent given to it.

The comparison of charts covering the same surfaces and based upon simultaneous observations is easy, and when, for close study, the charts are made to follow each other in regular sequence, the observations being taken at times so fixed as to divide the daily twenty-four hours into equal periods of time, they offer advantages which it is not possible to arrive at by any other process. It is charts of this description which render a world-wide study possible, and with which will be attained in the future results, up to this time, only but faintly foreshadowed.

The work of this office is based almost wholly on observations of this description. The office series of simultaneous observations has run continuously from November, 1870. It is through observations of this character the concurrence of the nations has been invited for the preparation of the charts hoped to be extended until they cover the world.

Since the date of the last annual report additional international charts have been added to the series of charts. These charts are, like those before referred to, charts of the whole northern hemisphere, and are so made as to exhibit with close approximate correctness the geographical relations of the earth and water surfaces in that hemisphere to each other. They display, condensed by months, the means of barometric pressure, of wind-direction and force, the means of temperature, and the average course of movement of areas of low barometer for each month. These charts are based almost wholly upon the international exchange of reports taken simultaneously.

The wide circulation given these charts in the Monthly Review, to which they form now an accompaniment, offers this world-work to many readers. It completes for the present the series of charts, to form which the labors of the international service were at first undertaken, and opens easily to study a field of research very nearly co-extensive with

the northern hemisphere. A series of charts for the especial studies of storm-tracks are prepared as an established office series. On such charts are traced ocean storm-tracks, these tracks being charted primarily over this continent by the regular reports at this office and at sea and on other continents, by such meteorological reports as may be had from the sea and the distant continents, together with such other information as may be collected at this office up to the dates at which the several charts issue. The construction is continuous from month to month, a storm-track commencing in one month appearing on and being continued on the charts issued for the next succeeding month, the portion of the track continued in this latter month being located by such supplementary information as may have been collected up to the date of the last issue. Thus for each succeeding month.

Examples of these charts are found accompanying the issues of the Monthly Review, in their sequence.

A second meteorological congress was held at Rome, Italy, in April last. At this assembly the practical use of observations taken simultaneously, upon which use the system of this office has rested for studies and for charts for a number of years, was encouraged.

The collection of material for maps, to cover large portions of the earth's surface—interesting, by the gratuitous distribution of copies of the work of the office, to all who should, by forwarding data or material, become regular co-laborers in the office work, as has been long the usage in this country—was commended for general adoption. The daily and wide distribution of the International Bulletin and international charts is for this purpose.

The publications of the office, *The Weather Review*, were mentioned as models of work to be desired in Europe.

It was urged upon the United States to furnish full systems of reports from the stations on Pike's Peak and Mount Washington.

These evidences of appreciation are grateful. They go far to assure the friendly co-operation of the nations to perfect a world-wide meteorology.

The total number of daily reports, of all kinds, now received and filed at the office of the Chief Signal-Officer, is as follows: Number of daily service telegraphic reports, four hundred and forty-nine; number of international daily simultaneous reports, three hundred and twelve; number of reports from voluntary observers, four hundred and sixty-seven; number of reports received from the Medical Corps of the Army, one hundred and twenty-three; number of reports received from United States naval observers, thirty-one; making a total of one thousand three hundred and eighty-eight reports received regularly for discussion.

Paper 26 exhibits a list of the military posts from which meteorological reports have been regularly received at this office during the year.

A list of the voluntary observers who have furnished monthly meteorological reports to this office during the year ending June 30, 1879, is exhibited in paper 27.

As described in previous annual reports, the daily official deductions or forecasts issuing from the office of the Chief Signal-Officer and constituting the tri-daily Synopses and Indications (as they are styled), and the especial deductions, in pursuance of which the orders for the display of cautionary signals at stations are given when necessary, are based upon the regular reports of the service stations of observation, transmitted tri-daily to this office by telegraph, after passing over a system of telegraphic circuits so arranged as to at once concentrate the reports at this office, and to distribute in doing so certain numbers of them at designated cities and stations. Especial reports are demanded from any

station, or number of stations, whenever additional information is required as to impending disturbances. The synopses are those of the meteoric conditions existing over and near the United States for each period of twenty-four hours terminating at the hour for each general report. The indications are announcements of the changes, considered from the study of the charts, in connection with such rules and generalizations as the experience of this office and the study of meteorologists seems to have determined to be indicated as to happen within the twenty-four hours then next ensuing. The study for each issue requires the draughting and examination of eight charts, these charts exhibiting chartographically the data furnished by the simultaneous reports of the stations heretofore referred to, and located in the United States, on the Atlantic and Pacific coasts, on the coasts of the Gulf of Mexico and of the lakes, in the western interior, and in the Dominion of Canada, Nova Scotia, Newfoundland, New Brunswick, and the West India Islands. The plans in use in this office for charting differ from any other. They are based upon the study of observations actually taken simultaneously. These charts are as follows: (Map 2.) (a.) A chart of barometric pressure reduced to the temperature of freezing and sea-level; of temperatures and of winds, together with the wind-directions and the velocities at the different stations; the amount, but not the nature, of the cloud formations at the different stations; the character of the precipitation, if any, occurring at the time of the reports; and the amount of precipitation, if any, since the time of the last preceding report. This chart exhibits barometric pressures and the temperatures noted at stations in their relations to districts of territory and to each other, by a system of isobaric and isothermal lines inscribed. The isobars are chartered for inches and tenths of inches of barometric pressure; the isothermals for temperatures represented by the multiples of 10° . The wind-directions are shown by arrows at the different stations. (Map 3.) (b.) A chart of the relative humidities appearing to exist over territorial districts, with the temperatures at the different stations in relation to districts and to each other. The chart of humidities enables studies to be made in reference to territorial sections, the difficulties attending the study of observations of this character being obviated to a very considerable extent by the inter-correction of stations among themselves and by the great extent of the regions over which the readings are made simultaneously. In fields so great purely local conditions in part disappear, or affect very slightly the general result. This chart contains also the character and amount of the lower clouds, and the character, amount, and direction of motion of the upper clouds, when these are visible. On this chart are traced lines of equal relative humidity, and isothermals are also drawn, as described in chart a. (Map 4.) (c.) A chart of the cloud conditions prevailing over the United States, in which the character of the different varieties of clouds and their amount, as viewed from each station, are represented graphically by appropriate symbols. On this chart also appears the weather as reported at each station at the time of each report by symbols; the stations at which rain has fallen since the preceding report, as well as the direction of movement of the upper and lower clouds, and on it each morning there are entered the minimum temperatures noted during the preceding night at the separate stations at the local times synchronous with the hour of 11 p. m., Washington mean time, and lines of minimum temperature are traced to exhibit these temperatures in relation to districts of territory. On this map are entered also the maximum velocities of the wind at particular stations when required to be specially reported in the intervals between the hours of regular report. The cloud-areas

appearing on this map are surrounded by an outline charted to enable the extent and probable movement of these areas to be considered. There also appears on the copy of this chart, made at the hour of the midnight report, the appearance of the sunset at each station, as reported by the observer at that station, and as considered by him to indicate, when taken in connection with the appearance of the western sky at sunset, the character of the weather to be anticipated at that station for the twenty-four hours next ensuing. (Map 5.) (d.) a chart of normal pressures and variations from normal pressures for each eight hours. There have been computed during the past year, at this office, the means of the observed pressures recorded at each station, at each of the hours at which observations are made at that station, for the regular simultaneous telegraphic reports for each monthly period. The series of observations used in computing these means has been for as many years as was possible at each station. These mean pressures are the mean pressures computed from the actual readings had at each station, at the habitual hour of observation, for each of the tri-daily full telegraphic reports required to be made from that station, and obtained, as explained above, by reducing the readings then made to a uniform temperature—freezing—and correcting for instrumental error (variation from the standard) only. Mean pressures so obtained are styled in this office “normal pressures” for the station, for its local hour of the report and for the month. On this chart is entered at each station, with the symbol + or —, the value by which the actual reading reported from that station at the hour of any report is above or below the “normal pressure” for that station for the hour of that telegraphic report and for that month. These deviations from such normal pressures may be styled “departures” from the normal pressure; the comparison of these departures for each period of eight hours shows what changes have taken place in the atmospheric pressure at the different stations, in each period of eight hours, after eliminating the hourly variations of pressure. On the chart are traced lines of “no variation” in normal pressures, being the lines along which the pressures are at the time practically normal, and also lines of “departure” from the normal pressure for each one-tenth of an inch of mercury, by which the actual readings as reported are found to be above or below the computed normal. Such lines are traced for each period of eight and of twenty-four hours. This method of noting barometric pressures enables those taken and reported simultaneously from any number of different stations to be considered for purposes of study in relation to each other without reference in each case to the local questions of altitude, hourly variations of pressure, or other disturbing causes at the places at which they may be taken. This chart exhibits also the normal pressure for the month at the station, and the wind-direction as given at the hour of the daily report. (Map 6.) (e.) A chart of actual barometric variations. This chart exhibits the observed readings of the barometer at different stations, corrected for instrumental error [variation from the standard at Washington] and for temperature, the mercury reduced to the temperature of freezing, but not reduced to the hypothetical readings at sea-level. In this office, observed readings so treated are known as the “actual readings.” On this chart are traced lines of “no variation,” showing the lines along which no change in actual pressure has occurred for the periods of eight and twenty-four hours, respectively, preceding the hours of report, and also lines showing the lines of rises or falls of the actual readings of the barometer for each one-tenth of an inch and for the same respective periods. This chart is valuable as exhibiting the nature and extent of actual barometric pressures, and the changes of such pressures, taking place at the different

tations, and over the different territorial districts. (Map 7.) (*f.*) A chart of dew-point variations. On this chart there are entered the values of the changes of the dew-point at the several stations for the periods of eight and twenty-four hours preceding the hours of report; there are traced also lines along which there has been "no variation" in dew-point during such periods respectively, and lines showing the rises and falls for each five degrees in the dew-point for the same periods. (Map 8.) (*g.*) A chart of dew-points, vapor tensions, and actual humidity. On this chart are entered the values of the dew-point at the different stations, and lines of equal dew-point are traced for each ten degrees difference of the dew-point readings. At the extremities of these lines are noted the values of vapor tensions and actual humidity, corresponding to the given dew-point lines. The examination of the charts *f* and *g* enables the hygrometric conditions of the air and the changes in such conditions which have occurred within the periods of eight and twenty-four hours, respectively, to be considered in so far as these are indicated by the wet and dry-bulb psychrometers at the different stations.

During the past year there has been prepared in the map room of the office, and to be used in connection with the studies to be had from the maps above enumerated, a colored contoured map. This map exhibits, by colored surfaces of different colors—each colored surface being bounded by contour lines—the elevations of the different terrestrial surfaces on which the stations of the Signal Service are situated, and the map exhibits as a whole the relations as to elevation of all the surfaces within the United States, Mexico, and the Dominion of Canada, over which the work of the office extends. The direction of movement of atmospheric areas may, by the study of this map, be judged of to some extent by considering the contours of the earth's surfaces over which such areas are found charted, and towards which they are thought likely to move. The linear charting has been based upon data had from Gannett's linear contour map of 1877, and from Guyot's Wall Atlas of 1863. A chart embodying additional data is now in preparation.

Several series of computations have been made in the computing-room of the office to enable additional charts each to exhibit in the lines of its charting the condensed data in their relation to each other. The regular series of computations has been continued.

The number of separate graphic chartings made and examined in the study-room, for the purpose of the daily studies of the office, during the year ending June 30, 1879, has been eight thousand seven hundred and sixty. The charts prepared for the issues of the Monthly Review, and exhibiting each the data received for the month and discussed for the month, have varied from three to seven in number for each month, a total of fifty-four for the year. The increase in number has been due to the addition of International charts.

The data thus accumulating on the files of this office have afforded scope for generalization differing from and perhaps more extensive in number than any before had by any one nation.

The number of reports received daily and unceasingly have necessitated a constant labor to keep up, in the discussion of them, and in the record of the results of that discussion, to the dates at which the reports are recorded, in order to prevent an accumulation which, by its mass, might lessen their usefulness. The published daily study-charts of the office and the Monthly Review, with its charts of generalizations are examples of this work—the study-charts exhibiting a study of the data telegraphically received on each day; the charts of the Monthly Review combining the results had from these data and those received from other sources for each month during the year. It has been thus

the power of the office to lay before scientists and the public, at the close of each day, if necessary, and at the close of each month and each year, a summary for the periods then terminating. The labor of referring to the individual records in figures, which, after a time, becomes most impracticable, is thus rendered unnecessary on the part of those who receive these papers. The charts of the average direction and velocity of movement of areas of low barometer, charts of the average barometric pressures at the hours of tri-daily report, charts of wind direction found most frequent at the different stations before rain-fall, charts of rain-frequencies for the different months, are examples of other instances of generalization. Studies of this character, and incidental to the service which have in view the pre-announcement of storms or other meteorologic changes, furnish results valuable for practical uses.

The dissemination of this character has been so freely and so widely furnished that it is not always considered that by no other nation is information of a similar character furnished to nearly a similar extent, and nine years ago it had not been contemplated in the United States to be possible to furnish it to all.

It is by studies of this kind, and in this great field of research, that the hoped-for rules, each of which is to add its aid in the effort to attain precision of forecast and foreknowledge of climatology for the United States, are to be elaborated. It is by such rules and such knowledge, slowly but each year improving, the widest benefits of the service are to be sought. These will follow the practical use, by the people themselves, of the information gained through the work of the service, either in their attempts to have foreknowledge of coming changes from the indications of their own instruments, or by supplementing that study by reference to the daily-published bulletins and reports of this office. There is hardly a class of the people, or an industry they practice, but to which it may, in this way, and from such studies, result. Enough has already been done to prove that it is possible.

The policy pursued by the office of diffusing as widely as possible, in condensed form, the information in its possession, and that of extending the scope of its observations, enables it to benefit, in studies of these, by the labors of students everywhere. The results returned to the office, in the able suggestions made by distinguished scholars who have received its publications, and based upon deductions had from the reports and data so furnished, aid in forming the rules on which its duties are performed. The list of correspondents to whom the publications of the office are furnished contains the names of many of the leading scholars and scientific men in different parts of the world. The instances are not infrequent in which the most interesting papers upon the subject of meteorology, read before the most distinguished and learned societies in the United States, have rested for their value almost wholly upon the studies of the data of observations and the charts prepared at and furnished from this office.

The search for generalizations or the support of theories becomes comparatively easy when the material is furnished in elaborate form, requiring little more than collation for either.

The Synopses and Indications have been furnished for the press at the regular hours, 1 o'clock a. m., 10.30 a. m., and 7.30 p. m., daily, and under the same rules as in preceding years. There has been no failure in the delivery of any report during the year. The total number of statements issued for publication has been one thousand and ninety-five. These have been telegraphed at the moment of their issue to the principal newspapers, and have appeared in some form in almost every journal in the United States. A careful analysis of these statements of the office,

made for the year terminating June 30, 1879, and a comparison with the meteoric conditions afterwards occurring within the twenty-four hours next ensuing, and within the district to which each forecast has had reference, has given a percentage of verifications as follows:

Reference is had to the district map:

Percentage of verification for each month of the year ending June 30, 1879.

	1878.						1879.					
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.
New England.....	80.6	84.4	83.5	87.6	89.1	88.6	85.5	93.8	89.3	81.8	84.3	84.9
Middle States.....	77.8	87.6	85.9	88.4	90.8	87.0	86.0	94.1	90.5	87.2	85.6	86.0
South Atlantic States.....	83.5	89.5	89.2	87.3	81.8	85.5	88.6	92.3	91.6	82.0	80.4	79.8
Eastern Gulf States.....	89.8	91.9	83.4	87.2	88.2	90.1	87.0	92.7	90.7	83.5	76.6	80.4
Western Gulf States.....	88.7	91.2	89.5	89.1	90.4	88.6	83.5	90.0	87.8	81.9	76.7	81.4
Lower Lakes.....	84.9	86.7	81.9	85.3	91.0	87.1	87.0	94.1	91.2	83.2	84.7	88.6
Upper Lakes.....	83.1	87.6	83.3	87.4	89.7	88.4	88.1	92.5	89.6	81.8	87.1	80.8
Tennessee and Ohio Val- ley.....	81.6	82.3	85.8	86.8	92.4	85.5	86.3	95.8	89.4	84.4	84.2	84.9
Upper Mississippi Valley.....	84.2	88.8	84.2	89.4	92.4	85.2	85.6	92.1	88.1	81.5	84.1	83.3
Lower Missouri Valley.....	82.9	83.9	82.8	86.8	91.5	84.6	84.6	91.4	89.1	80.1	84.0	81.2
Total percentage of veri- fications.....	83.7	87.1	85.0	87.5	90.7	87.1	86.2	93.0	89.7	82.9	82.8	83.7
Percentage of verifications for the year (changes of barometric pressures, temperatures, wind- direction, and character of weather expected comprised).....	88.6											
Percentage of verifications for the year (forecasts of the character of the weather only).....	90.7											

The percentages of accuracy first above given are for statements comprising the predictions of the changes of barometric pressures, temperatures, wind-directions, as well as the character of weather to be expected in the districts to which they have reference. Such predictions are more difficult to make correctly than those relating to the future conditions of the weather alone, for in such forecasts it must be pre-announced for twenty-four hours for each district outlined upon the map, whether in that particular district the barometric pressures will increase or diminish; whether the temperatures will rise or fall; what in each district will be the wind-directions, and other statements far more difficult to make accurately than the general forecasts that the skies will be clear or cloudy, and with and without rain. The percentage of accuracy of forecasts limited to the pre-announcement of the character of the weather to be expected in the districts, exclusive of the other conditions above referred to, has been 90.7.

It has been possible to exhibit in this report, for the first time, the percentages of accuracy of verifications of indications announced for the Pacific coasts of the United States, as follows:

Percentage of verifications for the Pacific coast region for the months given.

	1879.				
	Feb.	March.	April.	May.	June.
Northern Pacific region.....	91.1	91.1	78.4	93.1	88.3
Central Pacific region.....	96.4	83.7	83.8	85.4	93.3
Southern Pacific region.....	83.9	87.5	90.5	93.1	95.0
Total percentage of verifications.....	90.5	89.1	84.2	90.5	92.2

These Indications are for the "weather" only, and, for the period made, the general percentage is 89.3.

There was need of much deliberation and practice before it was deemed feasible to attempt the work of forecasts for the great extent of coasts bordering upon the Pacific Ocean. Tradition had held it to be impossible accurately announce approaching changes for any coast fronting seaward with sea-surfaces only beyond it. The stations upon the coast for consideration are yet few, the telegraphic communication difficult, the contours of the earth's surface broken by abrupt and great changes of elevation—the stations lying back from the coasts so difficult to reach as to be almost useless. It has been found, however, that the facilities now provided in the study-room of the office enable changes approaching from the seaward to be considered by their effects on land, and studies to be made as to what sequences at sea and upon the coast best follow conditions exhibited upon the charts as existing in the interior. The results of such studies are exhibited by the statement of verifications submitted above. This work is not without its reference to the work upon the oceans. Map 9 exhibits the districts into which the region has been divided for purposes of this study.

The attempt has been continued to utilize the statements of indications issued in bulletin form by adding, when possible, precise information as to the location of areas of disturbance or storm-centers, their extended direction of movement, and such other facts as might be stated upon the bulletins to be displayed at board-of-trade rooms and other prominent points in cities, and be of utility both as amplifying the results of indications furnished for the press, and also as capable of being read from the central office at any hour it might be considered necessary so to issue them. The press reports are habitually furnished at fixed hours only. At these hours important and sometimes great atmospheric changes may seem to be only slightly indicated, when such changes afterward develop rapidly. It is sometimes not possible to pre-announce them in any other than the bulletin form. The popular faith in the announcements of the office, now in the ninth year of their issue, has not diminished. So far as can be judged from reports, notably more attention has been paid to the announcements among the farming population. There seems each year more confidence and a greater willingness to be guided by the statements of forecasts in the conduct of agricultural operations. The increase in the proportional amount of the wheat produced this year has been commented upon by the local press, in some sections of the country, as to some extent due to the accuracy of the weather reports furnished the farmers daily.

This confidence of the people as a whole has not been sensibly lessened any time by the errors and omissions which sometimes direct attention to the fact that in the present condition of science, and with a system of observation still too limited, premonitions having for their scope a territory so great as that of the whole United States, and embracing the coasts of two oceans, cannot always be correct for every part of a district.

The reports of forecasts are necessarily limited also to a certain number and few telegraphic words, the report for a district comprising several States being condensed into four or five lines, every word of which must be paid for.

It is not possible always to describe within this limit of description weather changes clearly indicated as to occur, but notice of which must be omitted for want of space. It would not be difficult to write for each State, and with benefit to the readers, a synopsis with the forecasts stated in numbers of words equal to the whole number now allowed for those pertaining to all the States of the Union.

The Indications are not always correctly understood by those who read them; the error of mistaking the announcement made for one district, as set forth on the District Map, as applying to a district differently located is frequent. Every effort is made to render the division of the country into districts for purposes of description properly understood.

The popular knowledge of the duties of the office, and its reasonable success in discharging them, is in no way better evidenced than by the criticisms to which it is subjected if errors occur in the work. It is not many years since the work itself was, at home and abroad, deemed impracticable. In more recent criticisms the work has been commented upon adversely and severely, because even occasional errors happen. It has seemed to be considered that it ought never to fail. There has been no work other than that of this office to cause such success to be popularly expected. Criticisms of this kind are, by the general accuracy they imply, a source of satisfaction.

The instruction of officers of the Signal Service to fit them for the various duties of the office has been continued. The especial duties in which the officers on duty are severally engaged, each in his sphere, and each of which duties contributes its share to the success of the whole, are such as necessarily prepare them for the course of especial study and practice, and fit them to take charge, in turn, of the separate divisions and sections into which the office-work is divided. A roster for duty becomes in this way possible, and provides at once for the permanent continuance of a work to be prosecuted both by day and at night, by providing for the relief of men wearied in the discharge of such parts of the duty as impose severe physical as well as mental strain by others fresh from duties less burdensome. It insures also the instant filling of vacancies in the cases of sickness or absence of any officer.

The studies to which reference has been hitherto made and the data condensed for generalization improve each year the material had in the office for study.

In the incessant work of the map-room, and in making the computations constantly called for in the course of office duty, important assistance is rendered by the competent and well-taught non-commissioned officers and soldiers on duty in the several divisions. In the matter of arriving at generalizations, it would be impossible often to handle the masses of data which must be considered without the faithful service of these men. While absolute accuracy cannot be expected in work so extensive as that required from this office, and the results of which are demanded for instant publication, there is attained an accuracy sufficient for every practical purpose, and one which each year increases in rigor.

The data which appear in the publications of this office are checked figure by figure five times before the printing. These are, whenever it is practicable, accompanied by a chart, useful in itself, and by the charting the best check upon all the data which have served as its bases. Additional checks are adopted whenever experience has demonstrated a closer accuracy can be had.

The display of cautionary day and night signals, by flags by day and lights by night, has been made systematically, on occasions of supposed especial danger, at the following points, ports, and harbors located upon the lakes, the Atlantic, and the Gulf coasts:

Alpena, Mich.; Atlantic City, N. J.; Ashtabula, Ohio; Baltimore, Md.; Barnegat, N. J.; Bay City, Mich.; Booth Bay, Me.; Boston, Mass.; Buffalo, N. Y.; Cape Hatteras, N. C.; Cape Henry, Va.; Cape Lookout, N. C.; Cape May, N. J.; Cape Vincent, N. Y.; Charleston, S. C.; Charlotte, N. Y.; Chatham, Mass.; Chicago, Ill.; City Island, N. Y.; Cleveland,

Ohio; Deer Island, Me.; Detroit, Mich.; Duluth, Minn.; Dunkirk, N. Y.; Eastport, Me.; East Tawas, Mich.; Erie, Pa.; Escanaba, Mich.; Fairport, Ohio; Fall River, Mass.; Forester, Mich.; Fort Macon, N. C.; Frankfort, Mich.; Galveston, Tex.; Gloucester, Mass.; Grand Haven, Mich.; Green Bay, Wis.; Highland Light, Mass.; Horn's Pier, Wis.; Hyannis, Mass.; Indianola, Tex.; Jacksonville, Fla.; Kenosha, Wis.; Kewaunee, Wis.; Key West, Fla.; Kittyhawk, N. C.; Lewes, Del.; Ludington, Mich.; Mackinac City, Mich.; Manitowoc, Wis.; Marblehead, Mass.; Marquette, Mich.; Menominee, Mich.; Milwaukee, Wis.; Mobile, Ala.; Monroe, Mich.; Muskegon, Mich.; New Bedford, Mass.; Newburyport, Mass.; New Haven, Conn.; New London, Conn.; New Orleans, La.; Newport, R. I.; New York City; Norfolk, Va.; Northport, Mich.; Oswego, N. Y.; Pensacola, Fla.; Pentwater, Mich.; Port Austin, Mich.; Port Eads, La.; Port Huron, Mich.; Portland, Me.; Portsmouth, N. H.; Racine, Wis.; Rochester, N. Y.; Rockland, Me.; Rogers' City, Mich.; Saint Joseph, Mich.; St. Mark's, Fla.; Sandusky, Ohio; Sandy Hook, N. J.; Savannah, Ga.; Sheboygan, Wis.; Smithville, N. C.; South Haven, Mich.; Stonington, Conn.; Sturgeon Bay, Wis.; Thatcher's Island, Mass.; Toledo, Ohio; Traverse City, Mich.; Tybee Island, Ga.; Wilmington, N. C.; and Wood's Holl, Mass.

During the year ending June 30, 1879, two thousand five hundred and seventy-three signals have been ordered, counting each separate display at each port as a separate signal, in anticipation of ninety-six dangerous storms.

Of the number of cautionary signals displayed, seventy-nine and eight-tenths per cent. have been afterwards reported as justified by the occurrence of winds, &c.

Of the number of off-shore signals displayed, ninety-three and nine-tenths per cent. have been afterward reported as justified.

The following table exhibits the number of signals (cautionary and off-shore) ordered during each month, and the percentage of verifications for each month; also the total number of signals ordered during the year, with the total number verified and annual percentage of verifications:

Month and year.	Cautionary signals.		Off-shore signals.		Total number of signals.		Total number verified.	
	Ordered.	Per cent.	Ordered.	Per cent.	Ordered.	Per cent.	Ordered.	Per cent.
1878.								
July	78	82	11	0	89	82	89.7	
August	39	30	6	4	45	34	75.6	
September	158	130	17	14	175	144	82.3	
October	234	207	93	73	327	280	85.6	
November	260	202	111	83	371	285	76.8	
December	187	153	136	113	323	266	83.0	
1879.								
January	167	140	132	118	299	258	86.3	
February	143	115	110	98	253	213	84.1	
March	199	157	81	72	280	229	81.8	
April	192	128	96	80	288	208	72.2	
May	178	110	42	17	220	127	57.7	
June	117	103	15	9	132	112	84.8	
Totals	1,052	1,560	850	681	2,802	2,240	79.94	

The display of this signal will often follow and must be distinguished from the display of the usual "cautionary signal," i. e., a square red flag with a square black center by day or a red light shown at night—which retains, when shown alone, its usual meaning. The display of either is always cautionary.

It is of important utility in the management of vessels and for the safety of them to be thus preadvised as to the direction in which coming winds will blow.

The plan for subordinate stations at which cautionary signals might be displayed (systems of these stations being managed as subordinate to and in connection with the signal-stations of the first class, established at the principal cities and ports of the United States, and immediately controlled from this office) has been continued in operation since the date of the last annual report. As described in that report, these subordinate stations are known as "display-stations." They are located at the smaller lake or sea ports, and are classed several together in sections. Each section is numbered as "Section one," "Section two," &c., and is under the immediate supervision of a sergeant of the Signal Corps, located at a named station at some neighboring principal port. The duties at display-stations are limited to the display, upon the receipt of the telegraphic order by day or at night, of the cautionary signals or cautionary off-shore signals.

Display-stations have been established on Lakes Erie, Ontario, Huron, and as follows: *Section three*, established July 20, controlled from Detroit, Mich., consists of stations at Ludington, Pentwater, Traverse City, Frankfort, Northport, Saint Joseph, South Haven and Muskegon, Mich. *Section four*, established August 1, controlled from Detroit, Mich., consists of Bay City, East Tawas, Forester, Port Austin, Roger's City, and Monroe, Mich. *Section five*, established August 1, controlled from Cleveland, Ohio, consists of Dunkirk, N. Y., Fairport and Ashtabula, Ohio. *Section six*, established August 1, controlled from Oswego, N. Y., consists of Cape Vincent, N. Y. Signals ordered for Chicago, Ill., were repeated at New Buffalo, Mich., until February 15, when it was discontinued as a display-station. Signals ordered for Rochester, N. Y., are repeated at Charlotte. Cautionary signals are displayed at Mackinac City, Mich., when ordered direct from this office. On the sea-coast as follows: *Section seven*, established August 20, controlled from Portland, Me., consists of Millbridge, Deer Island, Rockland, and Booth's Bay, Me., and Portsmouth, N. H. The display of signals at Millbridge and Deer Island, Me., was discontinued August 19, but resumed at Deer Island, April 1. Belfast, Me., was originally in this section, but was discontinued June 1. *Section eight*, established August 15, controlled from Boston, Mass., consists of Chatham, Newburyport, New Bedford, Marblehead, Hyannis, Thatcher's Island, Gloucester, Highland Light and Fall River, Mass. The display of signals was suspended at Fall River, Mass., May 2. Signals ordered for New London, Conn., have been repeated at Stonington, Conn., since October 10, and were repeated at Watch Hill, R. I., from October 15, until September 15, when the telegraph office at that place was closed for the season. Signals ordered for New York City have been repeated at City Island, New York Harbor, since February 11. Signals are ordered for Lewes, Del., direct from this office, and for Port Eads, La., through the sergeant at New Orleans, La. Signals ordered for Mobile, Ala., have been repeated at Pensacola, Fla., since November 10. Tybee Island, originally a station of the first class, was discontinued as such and designated a display-station, February 15; since that time signals ordered at Savannah, Ga., have been repeated at

n the form of printed forecasts for the benefit of the agricultural populations, frequently described in former reports, has been continued in operation. The effort to cover so wide an extent of territory has made the labor great. The continuance of the work has seemed to be warranted by the favor with which it has been received. It has been considered due to the farming populations that they should have an opportunity to profit by whatever information could be given them. With the active co-operation of the Post-Office Department, with which there is an arrangement for this purpose, six thousand and forty-two printed Farmers' Bulletins, on which have appeared daily the reports of this office, have been distributed and displayed in frames daily at as many different cities, villages, and hamlets in different States. There are numerous and especial requests to increase this number. At 1 o'clock a. m. of each day, except Sunday, the midnight report of the office for the ensuing day has been telegraphed during the year ending June 30, 1879, to seventeen centers of distribution, located in the following-named cities: Albany, N. Y., 267; Bangor, Me., 166; Boston, Mass., 659; Buffalo, N. Y., 282; Burlington, Iowa, 187; Chicago, Ill., 613; Cincinnati, Ohio, 146; Des Moines, Iowa, 60; Detroit, Mich., 334; Leavenworth, Kans., 13; Logansport, Ind., 184; Memphis, Tenn., 20; Nashville, Tenn., 97; New York, N. Y., 712; Pittsburgh, Pa., 314; Philadelphia, Pa., 822; Saint Louis, Mo., 368; Washington, D. C., 472. In addition thereto, a miscellaneous issue of five hundred copies is made at the several printing stations above mentioned. At nine of these stations the bulletins are printed by civilian employes upon the office presses, and under the immediate supervision of the sergeants in charge. At the other eight stations the work is wholly done by enlisted men of the Signal Service.

The numbers placed after the names of the cities denote the number of hamlets, post-offices, or railway stations supplied from each city as a center.

These centers have been carefully chosen as in the midst of the denser agricultural populations of the United States, and at points whence the facilities of communication would enable the surrounding districts to be most rapidly supplied.

During the past year a station of distribution has been established at San Francisco, Cal., for the farmers of the vicinity and of the farmers of the Sacramento and San Joaquin Valleys, and one also at Des Moines, Iowa.

The telegraphic report of forecast telegraphed from the central office at 1 a. m. of each day, and received at a center of distribution, is at once there printed on bulletin forms provided for that purpose. These are enveloped as rapidly as printed, addressed to each designated post-office within the district to be supplied, and which can be reached by the swiftest conveyance by the hour of 2 p. m. of the date, and are then placed in charge of the Post-Office Department under an arrangement by which each postmaster receiving a bulletin has the order of the Postmaster-General to display it instantly in a frame furnished by this office for that purpose, and to report, in writing, the fact and time of its receipt and its display, to the Chief Signal-Officer.

The bulletins have reached the different offices and have been displayed in each of the frames at the average hour of 11 a. m., averaging thus ten hours from the time the report has left the office of the Chief Signal-Officer until it has appeared bulletined in the midst of the farming populations, and accessible to them in the distant parts of the country.

The information given on these bulletins has a value in addition to the forecasts. Facts relating to the climatology of the different sections

are condensed into brief notes, which are published with the telegraphed reports. For instance, each bulletin announces for the geographical district in which it is displayed, and in addition to the forecast for the day, what winds in each month have been found most likely and what least likely to be followed by rain at the stations within each district. The simple foot-note has its effect in increasing the gains and reducing the losses of harvesting. (Paper —.) These bulletins will improve for the uses for which they are intended as the experience of the office permits the information they exhibit to be supplemented with further data and other rules. With each year the popular knowledge of the uses of the bulletin and some increased interest in and study of meteorology render the farming communities better able to judge of its correctness and to benefit by its contents. It is contemplated, as the work of the office progresses, to add to the bulletin such brief instructions as may be developed in regard to its uses in connection with such local instruments as may be had for local use. Reference has been made in preceding reports to the economy of this work. Careful estimates have shown that if the total cost for each bulletin station at which the bulletin is displayed at each different post-office, hamlet, village, or city were computed to be twenty-seven cents per day, the sum so resulting would meet all the expenses caused by the Signal Service. A little saving of any one crop of grain to any interest made on any one day in the vicinity of each station, supposing nothing to be saved on any other day of the year at or near that station, would more than counterbalance the expenditure.

This distribution of the instruments known as the Weather Case, or Farmers' Weather Indicator, has been continued. Brief rules for use accompany each instrument. (Paper 28.) This instrument will supplement with local signs and with the local indications of the several instruments; it combines in simple form the general indications given in the bulletin reports. It will, it is hoped, enable agriculturists and others to determine for themselves in advance something as to the character of the coming weather from local indications alone, when added means of information cannot be reached or may fail.

Whenever appropriations at the control of the office shall make it possible to publish, to accompany the Farmers' Bulletin, or in the columns of newspaper journals, graphic weather charts, simply drawn and so explained as to be comprehended as to their meaning by persons of ordinary education without special study, the use, it is to be hoped, of instruments of this character will be found very available. The use of the Weather Case alone at isolated places, where other reports or information other than that had from the readings and the use of the instrument itself cannot be had, will, with little practice, fill a want long felt among the agricultural populations, and often afford to them valuable results. It cannot fail to turn thought and study in a useful direction.

It is in contemplation, when the amounts of the appropriations for the service and its strength permits, to place such instruments, should experience warrant, both at the farmers' post-offices now reached by the Farmers' Bulletin and at others not reached by either the bulletin, the daily press, or the telegraph, for the uses of the farming population.

Since the date of the last annual report, a greater and more satisfactory extension of the plans by which the information carried on the files of the office is disseminated among the people of the United States generally, has become possible. A railway bulletin service established on the lines of railway which cover the country so closely with their network, has been set on foot in co-operation with this office. By an ar-

arrangement made between the different railway companies and the War Department, the companies receive at the time of the midnight report, and by telegraph, a copy of the office report then made. This is the most important report of the day, the report exhibiting the Synopses and Indications, which appear so generally published in the columns of the newspaper journals. The report received by the railway companies is at once distributed, under the direct supervision of the superintendents of the companies and of the railway telegraphs, to designated railway stations along the several railway lines. Thirty-six railway companies, with a total of one thousand two hundred and twelve railway stations, are now co-operating in this service. The report received at a railway station is, by standing order of the railway officers, immediately there bulletined by the railway agents on forms provided by this office, and check reports are made by the agents to this office, in order that the attention of the superintendents may be called to any delay or error in the work. This work is yet in its infancy, but promises to be of great utility. It is capable of indefinite extension, and will exhibit the forecasts of this office daily, in a few hours after their issue, to the traveling public and the vast numbers of farmers and others resident in the great extent of country through which the railway lines pass, and who could not be otherwise reached.

The railway companies rendering this service to the United States, without charge, are not rendering a gratuitous service. A benefit is returned to them in the full knowledge given the managers of the railway lines of the weather conditions prevailing upon them. A further benefit comes to the companies that they render everywhere to the masses of the people, in the midst of which the lines pass, a daily service recognized with gratitude. The companies which have entered into this co-operation with the service are as follows:

Chicago and Northwestern Railroad, Albert Keep, president, W. H. Stennett, superintendent, Chicago, Ill., 79 stations; Kansas City, Fort Scott and Gulf Railroad, H. H. Hunnewell, president, H. C. Sprague, superintendent telegraph, Kansas City, Mo., 20 stations; Atchison and Nebraska Railroad, N. Thayer, president, W. H. Forman, superintendent telegraph, Atchison, Kans., 18 stations; Atchison, Topeka and Santa Fé Railroad, 32 stations; Atchison, Topeka and Santa Fé Railroad (Kansas City branch), 5 stations; Atchison, Topeka and Santa Fé Railroad (Pleasant Hill branch), 3 stations; Atchison, Topeka and Santa Fé Railroad (Wichita branch), 1 station; Atchison, Topeka and Santa Fé Railroad (Trinidad branch), Thomas Nickerson, president, and George B. Lake, division superintendent, Topeka, Kans., 2 stations; Saint Louis, Iron Mountain and Southern Railroad, Thomas Allen, president, and A. W. Soper, general superintendent, Saint Louis, Mo., 16 stations; Saint Louis and Southeastern Railroad, J. H. Wilson, president, and O. M. Shepard, assistant general superintendent, Evansville, Ind., 23 stations; Pittsburgh, Cincinnati and Saint Louis Railroad, Thomas A. Scott, president, and O. H. Booth, superintendent, Mansfield, Ohio, 35 stations; Kansas City and Council Bluffs Railroad, N. Thayer, president, and J. McCouniff, superintendent telegraph, Saint Joseph, Mo., 11 stations; Baltimore and Ohio Railroad (trans-Ohio division), John W. Garrett, president, and C. H. Hudson, superintendent, Chicago, Ill., 19 stations; Kansas City, Lawrence and Southern Railroad (late Leavenworth, Lawrence and Galveston Railroad), H. H. Hunnewell, president, and H. C. Sprague, superintendent telegraph, Kansas City, Mo., 19 stations.

This office furnishes the blank bulletins (Paper 29), the frames for

a.; Saint Louis, Mo.; Saint Paul, Minn.; Umatilla, Oreg.; Vicksburgh, Miss., and Yankton, Dak.

Systematic reports of river observations, carefully made and closely studied, are had daily by telegraph and weekly by mail, on established rivers, from the stations above named. Reports of similar observations, made daily, are also had from special river stations, named in the record of stations. The observers are, in fact, a river guard. For the months in which floods more frequently happen, and at any time in any case of special danger, the reports are telegraphed. For those months of the year in which danger is not anticipated from floods, these reports are forwarded by mail.

Charts of the changes in the principal western rivers for the year ending June 30, 1879, and upon which stations reporting to this office have been established, are given in charts 10 to 21.

It will be noted that by the study of such charts, continued from year to year, those seasons in which floods are more likely to occur on any water-course can be predetermined, and it can be ascertained what amounts of precipitation, occurring in the different river-basins, and under what circumstances, will be followed by floods, and, approximately, what will be the extent of floods shown in this way to be anticipated. Whenever the facilities of the Signal Service are so far extended as to permit systematic observations to be had of any river-course and telegraphic warnings to be given in instances of danger, the serious loss of property or life caused by floods can be, and with comparative little expense, guarded against on any river throughout the United States. The occasions occur on the separate streams at long intervals only. The levee systems of the Mississippi and other great rivers can be in no way better guarded themselves, and made in their turn safeguards to the immense agricultural interests they are intended to protect, than by systems of river reports, which will warn of danger in time, and summon, if need be, the strength of the State to watch and strengthen these State constructions.

The system of river reports is now extended to the rivers of California and Oregon, as well as to the principal rivers east of the Rocky Mountains.

The daily reports of the surface and bottom water-temperatures at designated points upon the lakes and seacoasts have been continued throughout the year as in preceding years. These reports are furnished at the request of Prof. Spencer F. Baird, United States Commissioner of Fish and Fisheries, the object had in view being to determine the proper waters in which to place the different varieties of food-fishes. It is necessary for this purpose to ascertain the extremes and means for the year of the water temperatures in the different localities. This series of reports has now continued for six years. Statistics of this kind—the depth of the water in the different streams being, as it is, daily noted—form the basis of a systematic study of pisciculture, in which are considered, by students attached to the commission, both the amount of the water supplies in different channels or basins at the different seasons of the year, and the temperatures to be expected in each. There is no more ready way for furnishing cheap food for the people than by the culture of food-fishes, and every facility for the work within the control of this office is gladly furnished to this end. It is quite possible that the great fisheries on or near the Atlantic coasts, or on the fishing banks, could be materially aided by the pre-announcement of the barometric or other atmospheric changes approaching, were the office informed of the precise nature of the reports to be desired. It is antici-

journals in which these charts have appeared have been located, however, in the city in which was the office at which the meteorological charts had been prepared. It was not of record that a weather chart, prepared at any central office in Europe or the United States, had been so arranged for that it could be telegraphed in such form as to appear in the lines of its charting simultaneously in the journals of different cities, each city widely separated from the others, and this telegraphing and printing so rapidly done that the map might accompany the printing at any city of the data for the day, from the study of which data the map itself had been charted at the central office in some other city. The duties of this office are of such a nature that all of the chart-telegraphing must be based upon plans which will enable all of the conditions thus stated to be filled. An attempt to transmit journal charts of this description to answer such a purpose was made at the time of the Centennial Exhibition of the United States, when a daily weather chart to accompany the daily weather report issued daily at that Exhibition was telegraphed each morning from the office of the Chief Signal-Officer at Washington to the station of the Signal-Service exhibit in the Government Building at the Exhibition at Philadelphia, and appeared each day as the official weather-chart issued in separate copies at the Exhibition and also in the columns of a daily journal there printed for daily issue.

These charts were transmitted by process of autographic telegraphy which could not be effective at great distances. They required special instruments. Within the year past the studies and experiments conducted at this office and having relation to this subject have resulted in such plans that it is now found not difficult to transmit to any city which can be reached by telegraph, and without the use of special telegraphic instruments, such data as will permit the charts prepared in the office to be exhibited in any city or cities to which the data are sent, in chartings precisely similar, of any size, and to appear printed in the columns of the daily journals at the same time that the forecasts had at this office, from the study of the original chart, appear printed in the same journal.

The difficulty no longer exists as to the telegraphic transmission of the chart. On May 9, 1879, the issue, daily, of a chart so transmitted by telegraph, from Washington, was commenced in the Daily Graphic, a journal printed in New York, and this issue has been continued daily. The processes are not yet considered perfect. It is hoped to obtain more satisfactory results.

It is not necessary to dilate here upon the advantages to result from the power of transmitting to any number of places and to any distance at which telegraphing is possible, with the rapidity of a telegraphic dispatch, copies of the charting of the weather conditions over any extent of the earth's surface, the copies exactly similar and made at any central office at which the proper data have been concentrated. In this connection the Chief Signal-Officer makes special acknowledgment of the services of Lieut. H. H. C. Dunwoody, acting signal-officer and assistant, whose continued experiments have contributed much to the success attained.

The forms of the bulletins heretofore referred to as those published daily for the use of farmers, of the special bulletins issued for the use of seamen, for the river reports, for the canal reports, for railway bulletins, and for the varied interests which the information borne upon the bulletins is intended to benefit, change gradually with increasing knowledge and facilities. Each form has its object. The number of bulletins issued

and is reduced to the smallest num-

weather Review and of the Weekly
ed during the year. The monthly
appendix. (Papers 30 to 41.)

s become co-extensive with the num-
graph and mail, all of which are
f which enters necessarily into the
ew. The collection of material for
especial storms, descriptions of or
he local journals of the region over
ews communicated by vessels en-
which accompany each issue of the
eteorological data. Each of these
n of data first chronicled on two
harts for the month. It will be
monthly reduction simplifies the

The Review exemplifies also, to
e great mass of data before men-
his office. Each issue of the Re-
Notes and Extracts," a brief sum-
gence, compiled from the publica-
y which the marked advances in
ught to the notice of the numerous
service. The section added in 1877,
Meteorology," has been greatly in-
ing the year just past. Additional
sphere, now accompany the Review
scribed in the text of the Reviews
lation given this Review meets, in
and in foreign countries, for general-
the receipt of a copy of the Review
voluntary observers, now its corre-
hair range around the earth, is ac-
nt acknowledgement of, and com-
ir daily reports. It is an advantage
t they are continued from month to
conditions existing upon the earth's
d in a regular sequence.

the publication of the "Synopsis,
in 1872, has been continued.

id Daily Bulletins, with accompa-
June 30, 1879, and other volumes
s they can be obtained from the

, one for each month, contain the
reports received at the office from
menced; the tri-daily charts, upon
on that day issued, together with a
onditions which subsequent reports
ing the time and in the district

It will be readily noticed that the
ensing and checking the bulletins
cal record as compact as ought to
for generalizations to be based upon
observations. The volumes them-

ives are useful for purposes of exchange, and bring to the office publications sent in return exchange, fully equaling their value. They constitute a meteoric record more full, perhaps, than any other now issued. It was estimated in the last annual report that by the publications of this office, which have been above referred to—by the cautionary signals displayed by day or at night on coasts or at ports in times of probable danger; by the announcement of probable changes of weather in the Tropics and Indications furnished thrice daily to the press; the Farmers' Bulletin exhibited at so many villages and hamlets in the interior; the river and canal reports made with reference to river and canal interests; the bulletins and data exhibited at all the great cities and ports; the symbol-maps displayed in boards of trade rooms, and rooms of chambers of commerce; the Weekly Chronicle and Monthly Weather Review furnished to agricultural societies, commercial associations, and correspondents of the office; the daily weather maps; the monthly charts; and, finally, the charts condensing the results of years of observation—the information emanating from this office was received in some form daily at not less than one-third of all the households of the United States.

To this wide diffusion there has been added since the date of that report, the increased circulation had by the twelve hundred railway-bulletin stations heretofore referred to.

As hitherto related in this report, while treating of the subject of international meteorology, the work of the office reaches later, by its publications, nearly every prominent establishment in the world. It is considered that it contributes to the world's work published material valuable now, to be more so in the future, and sufficient of itself to compensate for the whole cost of this service from its commencement.

The different reports of the office, of which mention has thus been made, continue to be favorably received in the communities for which they have been furnished. Their uses are acknowledged by commercial associations and other official bodies.

The regular daily publication of the reports of forecasts by the press, now continued for nine years without cost to the United States, is considered as an evidence of their usefulness and of the favor with which they are received by the communities for which they are intended.

The office continues to be in correspondence, in reference to its duties, with committees appointed for the purpose by the boards of trade and chambers of commerce of the principal cities in the Union, and also with a large number of agricultural societies.

Permanent committees, appointed by boards of trade, chambers of commerce, &c., have been in co-operation with this office since 1877. These committees inspect, in compliance with the request of the Chief Signal-Officer, the local offices of the service at the places in which the committees may be appointed, and report monthly to this office upon the condition and utility of the service in their vicinities. The boards in this way at once co-operate with this office and share the responsibility for its success.

The resolution upon which these committees were established, as adopted by a number of the prominent associations of the United States, is as follows:

Resolved, That the meteorological committee of the board of trade (or chamber of commerce) shall be a permanent committee, and that the names of the members, and any changes in membership, be, in each case, formally notified to the Chief Signal-Officer of the Army. The committee will confer with the Chief Signal-Officer and will bring before the board (or chamber) all matters requiring its action, as relating to, or needed for, the improvement of the Signal Service.

telegraphic work by them assured to the service have been sufficiently referred to in preceding reports. They have given satisfactory results throughout the year past.

The average time elapsing from the time at which the readings of the instruments have been had at the two hundred and ninety separate stations scattered throughout the United States and Territories, to that at which the reports based on these readings have been telegraphed to the offices and to the distributing stations, has been one hour and forty minutes.

It has been mentioned in preceding reports, but it is proper to again draw attention to the fact, as one of the consequences resulting from the organization of this office, that, by the use of ciphers, improved with the experience of years, the facility with which constant practice has rendered practicable the telegraphic work necessary for the reports, and the understandings arrived at with telegraphic companies, the annual cost of the telegraphic communications of the office has been reduced many thousand dollars. As an actual annual saving, this must be considered as a saving to the Treasury of the United States of an equal number of thousands of dollars. In the early days of the duty the telegraphic companies overestimated the labor required for the service, and the difficulties to be encountered by them in discharging it with the regularity and the vigor demanded. With the long experience of years the difficulties of this nature have vanished.

With the plans now for nine years tested on this continent there has been found no difficulty in collecting with sufficient rapidity meteorological data had over the widest extent of this continent's surface, and reaching from the Atlantic to the Pacific Ocean.

The application of similar plans for the telegraphic collection of data for any similar purpose whenever undertaken by any government or combination of governments upon the distant continents, as those of Europe, Asia, or Africa, cannot fail to be attended with similar results.

The relations of the office with the telegraphic companies are now cordial everywhere. It has come to be recognized that when this office insists upon work at very economical rates, and sometimes upon unusual telegraphic facilities, it is compelled to do so by the plainest dictates of duty.

The duties of this office, as charged with the supervision of the telegraphic duties of the War Department, and especially responsible, when called be, for the prompt transmission and proper care of the messages of the President and Secretary of War, and other superior authorities, together with the recognized position of the Chief Signal-Officer, as the agent of the Secretary of War, in the control and management of the interior lines now constructed and worked upon the frontier, and connecting as well military posts and stations as the villages and hamlets.

With the advancing frontier populations, devolve upon the office many new questions and the settlement of many and novel questions involving the relations of the United States and the different telegraph companies. In all these matters, the assistance and advice formerly given the office by the distinguished lawyers, then acting as special assistants to the Attorney-General, the Hon. William Whiting, at one time Solicitor of the War Department, and the Hon. Reverdy Johnson, formerly Attorney-General of the United States, both then acting as special assistants to the Attorney-General, have proven of the greatest advantage.

Few questions have arisen, or are likely to arise, which will fail to find their settlement in the lucid opinions and wise instructions prepared by these gentlemen.

violent gales need not break the communication along the coast. In cases occurring during past years, messages have been transmitted for weeks together over extensive breaks of wire lines reaching past inlets by means of the usual day and night signals with flags and torches. Similar methods may be used in the instances of broken lines in the interior.

The enlisted men at these stations are taught to take and report meteorological observations, and, as signal men, are practiced in both Army and Navy codes, in the usual semaphores, and in codes of permanent flag signals, to enable them to communicate with vessels of any nationality. The service has proven its usefulness in the cases of disasters to shipping and for the meteorological purposes for which it was established. It has been firmly established by its utility.

The sea-coast service stations in operation are located at Sandy Hook, Barnegat, Atlantic City, and Cape May, N. J.; Norfolk, Cape Henry, and Station No. 3, Va.; Kittyhawk, Cape Hatteras, Portsmouth, Cape Lookout, Fort Macon, New River, Sloop Point, Wilmington, and Smithville, N. C.

The constant changes occurring in the width of the numerous inlets across which the line upon the coast is carried by cables between Cape Hatteras and Wilmington, the character of the outer beach, the ground upon which the lines could be placed, the destruction of portions of the lines and changes in the coast itself, caused by storms, have made the maintenance and operation of the line south of Cape Henry a work of difficulty.

It is not necessary to explain at length the importance of a service of this character on our sea-coasts. The reasons for its maintenance and the benefits to be expected from it are manifest. The commerce which approaches a coast on which a thorough sea-coast service exists, is spared disasters, in comparison with the cost of which the cost of the service is little.

The watch kept by the service and the prompt transmission of a few messages have, in time of danger, saved life and property.

It has been a source of complaint among the seafaring men on all the coasts on which storm-signals have been attempted to be displayed, that while it might be learned by vessels lying in port and from the display of such signals, with reasonable certainty, whether or not a storm was so impending as to render it unsafe to risk exposure at sea, there was no plan of storm-signals devised or devisable by which it could be communicated to vessels themselves actually at sea, and in sight of the stations, beyond the mere fact that a storm was threatening, and fix what direction it was to be expected. It was not possible to advise what coasts it would be dangerous; whether or not any particular voyage might be continued in safety, or when and where shelter ought to be sought. The fortunate connection had by this office by means of telegraphic lines with all of its sea-coast stations has lessened these difficulties.

On February 4, 1878, an order was issued by which are announced the stations of the service prepared to hold communication by the international code of flag-signals with vessels of any nation at sea coming within the proper signal distance. It is so arranged that any question as to weather changes anticipated so signaled from the vessel to the shore station is immediately transmitted by telegraph to the central office, whence prompt reply is ordered.

This reply, on reaching the coast stations, is signaled by flags, if necessary, to the inquiring vessel. It is possible thus to gain any needed information without landing a boat. It does not appear how a system

ed communication comparatively easy between any of the stations on sixty-two miles of wire. This communication has at times been y serviceable. When the bark Admiral was wrecked near Repair tion and life-saving station No. 5, March 3, 1879, a private of the ps established a telephonic station opposite the wreck, and by this ans warned the adjacent life-saving crews of the disaster. It has ved of value on other occasions. The line is in immediate charge of ergeant of the Signal Corps, and is inspected by him monthly. It xamined also by the repairmen of the Signal Corps, who regularly rol the shore in their care for the permanent line.

The cables at the following-named inlets have been lengthed during year: At New Inlet, one hundred yards; at Ocracoke, two hundred l twenty yards; at Old Topsail Inlet, fifty yards; at Barnegat, nine- ight yards. A new cable, three hundred feet in length, was laid oss the Cape Fear River, at Wilmington.

The total number of messages received over the sea-coast line during year ending June 30, 1879, was eight thousand two hundred and ety-six; the total number sent in same period nine thousand five dred and fifty-three, or a total of seventeen thousand eight hundred l forty-nine messages received and sent; which would have cost, at ular tariff rates, eleven thousand five hundred and forty-six dollars l ten cents.

The Chief Signal Officer urges, as in preceding years, the maintenance per equipment, extension, and rapid working of the sea-coast lines l the sea-coast service. The temper of the nation can well be judged n the experience had in the instances of the Huron and Metropolis asters. There is no thought on the part of the people of any parsimonious economy nor tolerance of delay in the impatience with which y demand, on occasions of disasters, that succor shall be given to r imperiled life on the instant without consideration of cost. There is no question of the general joy with which every report of successful rt in this direction is received. There is no time for slow-paced ssengers when disasters are announced.

Whatever the difficulties of maintaining these lines practically on the -coast itself, and where the beaches and lines upon them are some es swept away together by the surge, the lines must be maintained e saving of a single ship or of a single life compensates the cost of rs. The fields of usefulness are so wide that it would be criminal to n from them.

f wooden lines fail, as they may on the coast, there is every reason believe the iron lines will not. Orders are now issued to substitute rapidly as possible iron for wooden supports. One hundred and fifty es of "iron line" are now standing on the coasts. The records of coming year will show whether the results expected from these lines overestimated. The time is not far distant when the possession of east not covered by sea-coast telegraph, not guarded by a sea-coast rm-signal and signal service, and not supplied with the force and ans of aid at life-saving stations, will be held as much an evidence semi-barbarism as is now among civilized nations the holding of any ional coast without a system of light-house lights.

The description of the sea-coast service has been made minute in this l in preceding reports because it is desired to show that a force of ined soldiers doing a land duty on shore, displaying signals hoisted land though answered from ships; watching, as sentinels, each his icial "beat" of sea and shore; telegraphing messages by electric wires summon-aid, or telegraphing them by the same flag and torch signals

ages may be sent circuitously by other wires perhaps covering hundred miles of distance around the point at which the line has been disabled. If the wire is not broken when the trail passes the line, the troops can of course be very readily called upon whenever or wherever the party may be discovered. But even if the line is passed safely and the trail not detected, the danger the electric wires cause is not ended.

Wherever the party may strike, if the blow falls near any settlement or station connected with the telegraphic network, the alarm becomes a few hours general. The troops on the line they have just passed now there is a war-party in the field; other troops and other settlements can be aroused. The line of the Indian retreat, the points they must pass to reach water, are approximately known, and while the pursuit goes on in the field other forces can occupy the passes and points of advance of the flying tribe. There can be no constructions more important for holding a frontier or protecting the first steps of advancing civilization than the telegraph lines. In instances occurring in Texas, New Mexico, and Arizona the movement of troops and of material, directed by telegraph, upon alarm sent by telegraph from settlements upon the frontier system of lines, has been so timely as to have attained results which could not, without the rapid action made possible by the lines, have been hoped for. How much of life and property have been saved from attacks thus guarded against, which might else have been made on defenseless communities, can be conjectured only.

From each of the stations on the telegraph lines thus in charge of the Signal Corps, a daily meteorological report is had and used, the whole forming a valuable portion of the office data each day discussed. The lines thus doubly useful are economically and successfully conducted, the saving in the cost of reports and the sums received for commercial messages make the lines in part self-supporting.

The existence of the lines in the interior of Texas has long permitted earnings to be exhibited on the coast of that State where they were before impracticable. The lines in the Northwest will permit a series of reports not otherwise attainable, the study of which is of the first importance to a proper care for the commerce of the lakes and to other great interests east of the Mississippi.

Appropriations made by Congress have permitted work to be continued, and to be pressed with rapidity upon telegraphic lines extending eastward in the vicinity of and covering the northwestern frontier. These lines mentioned as necessary in preceding reports of the Chief Signal-Officer are already so progressed that there is reasonable anticipation that telegraphic connection will be established with lines extending eastward from the Pacific coast within the coming year. The lines provided by this legislation are of the first importance for the protection and development of this frontier and of the regions through which the lines pass. There is no region in which the proportional increase of values, or the number of enterprises undertaken, have been greater during the year closing with the date of this report.

Fewer difficulties than were anticipated have been encountered in the construction. It would be difficult, after the experience of the service in line constructions in Western Texas, parts of New Mexico, and Southern Arizona, to encounter any which would be held to render such constructions impracticable. The adoption of iron supports makes it possible to carry a line over any ground on which the supports can be made to stand.

The force of the Signal Service will not enable it to successfully o

in existing legislation without ad-

A. Booth, acting signal-officer, has 3 lines in this division, pursuant to February 28, 1878, and instructions total length of line now in operation thirty-four miles. There are seven-

full meteorological reports are received undergone general repairs twice of the line during the year ending and seventy dollars and seventy-thousand three hundred and eighty-cents for this line, and eleven thousand and seventy-one cents were received. The amount of official business not limited at regular rates, nine thousand and fifty-four cents.

Station June 30, 1879: Campo, Cal.; Yuma, Ariz.; Tucson, Ariz.; Fort Lowell, Ariz.; Fort Grant, Ariz.; Phoenix, Ariz.; Wickenburg, Ariz.; San Diego, Cal.

opened during the year. The lines are in a difficult country. The work of the division has been commenced upon the

inspected during the year: Campo, September; Burkes, Ariz., September; Tucson, Ariz., September; Fort Lowell, Ariz., September; Fort Bowie, Ariz., September; Fort Thomas, Ariz., October; Phoenix, Ariz., October; Verde, Ariz., October; Prescott, August.

J. James Allen, acting signal-officer, during the fiscal year ending June 30, 1879, the total length of line now in operation in this division, 486

miles from El Paso, Tex., to connect with the line about 100 miles southeast of that place. The connection was made on Feb-

ruary 1879, to Silver City and Fort Craig near. Minor repair trips have been made by details of troops.

The line, at six of which full meteorological reports are telegraphed daily.

Active operation June 30, 1879: Los Angeles, Cal.; Los Cruces, N. Mex.; La Mesilla, N. Mex.; Silver City, N. Mex.; El Paso, Tex.; Yuma, Ariz.

During the year ending June 30, 1879, the total cost, including thirty dollars and eight cents, of material and ninety-seven dollars and thirty-four cents for this line, and three thousand four

hundred and thirty-two dollars and thirty-five cents were received to be paid to other lines.

The amount of official business not charged for the same period was estimated at three thousand nine hundred and ninety-eight dollars and ninety-eight cents.

The following is the record of inspections made of stations on this line during the year by Lieutenant Allen: Los Lunas, N. Mex., during October, 1878, and April, 1879; Fort Craig, N. Mex., October, 1878, and May, 1879; Las Cruces, N. Mex., October, 1878, and May, 1879; Lordsburg, N. Mex., October, 1878, and April, 1879; Fort Bayard, N. Mex., December, 1878, and May, 1879; Silver City, N. Mex., December, 1878, and April, 1879; El Paso, Tex., November, 1878, and April, 1879.

Texas division.—First Lieut. George S. Grimes, acting signal-officer in charge of this division from July 1, 1878, to October 15, 1878, when Second Lieut. C. A. Tingle, acting signal-officer, relieved him, pursuant to Special Orders No. 215, Adjutant-General's Office, October 15, 1878, and instructions from the Chief Signal-Officer.

During the year the telegraphic line has been extended from Fort Davis westward ninety-one miles, connection being thus established with the lines of the New Mexican division. This extension was completed and communication established February 5, 1879. The lines in this division have been maintained in fair working condition during year. Interruptions are reported to have been due to—first, the burning of wooden supports by prairie fires; second, the malicious destruction of insulators and wires with fire-arms; third, the falling of wooden line supports, the decay of which is very rapid in this climate. These heads of interruptions have been cited to show the numerous difficulties under which lines crossing the prairies of the interior are maintained. The remedy to the lines from the first of these causes named has been greatly aided by the remedy has been to cut down the grass immediately around the supports just before it has become so dry as to burn readily. This has entailed severe labor upon details from military posts in the case where the services of enlisted men have been used, and is expensive where citizen labor has been employed. The substitution of iron for wooden supports on such portions of the line as are endangered by prairie fires is the only effective remedy for the first of the interruptions above named. The second of the above-noted causes of interruption will lessen in number when legal proceedings are taken against the offenders under the laws of the United States. The crime committed is felony. A reward has been offered for the arrest of criminals.

The substitution of iron for wooden supports has progressed in this division as rapidly as the funds at the control of this office have permitted. Up to the date of June 30, 1879, thirty-one miles of line mounted wholly upon iron supports had been constructed in this division, and one thousand four hundred and fifty iron supports had been used for similar purposes upon the different lines in the division. The substitution of iron for wooden supports in all cases of repairs will gradually change the whole character of the line. The total length of line constructed in this division is one thousand five hundred and ninety miles on which there are twenty-eight stations, at twenty-five of which full meteorological observations are regularly taken and telegraphed.

The following-named stations were in active operation in the division June 30, 1879, viz: Denison, Pilot Point, Decatur, Jacksborough, Halletta, Cambridge, Fort Sill, Graham, Fort Griffin, Coleman City, Fort Hancock, Fort Davis, Fort Stockton, Fort McKavett, Mason, Frederickburg, Boerne, San Antonio, Castroville, Uvalde, Brackettville, Eagle

agle Springs, Laredo, Rio Grande City, Edinburg, Santa Maria
ownsville.

Following-named stations in the division were inspected during
r: Cambridge, October 1, 1878; Decatur, June 24, 1879; Hen
October, 1878; Jacksborough, June 27, 1879; Pilot Point, May 4
Fort Sill, September, 1878.

Aggregate cash receipts from telegraphic tolls on messages trans-
over the lines of this division for the year ending June 30, 1878
twenty thousand seven hundred and seventy-one dollars, of which
fifteen thousand one hundred and thirty-five dollars and two
this line, and five thousand six hundred and
nety-eight cents were received to be paid to othe
ficial business not charged, for the same period
hundred and seventy-four dollars and twenty

—In compliance with the act of Congress ap-
roviding for the construction of a military tele-
k to Fort Ellis, via the Missouri and Yellowstone
Buford, Fort Keogh, and Fort Custer, and from
h, via Deadwood, the work of construction was
under the supervision of Lieut. A. W. Greely,
erintendent of construction, assisted by detail
ious posts. The first line support was erected
is opened for operation to Fort Keogh Decem-
stance of 646½ miles constructed in 114 working
s were, at the same time, erected for a distance
between Fort Custer and Fort Ellis. Decembe
nected with Deadwood, twelve miles distant
ween Fort Custer and Fort Ellis, and thence to
one hundred and eighty-eight miles—was com-
3, 1878, and was completed January 30, 1879.
it. George S. Grimes, acting signal officer, suc-
eely, assuming charge of the work of construc-
emains in charge. The work of construction of
n was performed with unusual rapidity in the
lties.

s were in active operation November 30, 1878
venson, Fort Buford, Fort Meade, and Dead-
ort Keogh, Fort Custer, and Fort Ellis, in Mon-
Ferry Point, Mont.; Hunter's Springs, Mont.
e Missouri, Mont.; Morgan and O'Brien's Ranch
nt.; Rosebud, Mont.; Stillwater, Mont.; Terry's

ly opened for commercial business March 12

onsiderable extensions of the lines in this divi-
and the work of construction and the distribu-
forward state. The extensions completed, and
material for their construction has been pro-
ected, place in telegraphic communication with
rs every military post, with the exception of
ntana, and many important settlements in these

through which the projected extension of the
in this division will pass, to Fort Missoula in

out two hundred miles. The country is well timbered, and a line can be built to that point at a moderate cost. The advantages of a telegraph line from Fort Missoula to the several military posts in Washington Territory and Oregon can hardly be overestimated.

Total length of line in this division June 30, 1879, nine hundred and twenty-one miles.

The aggregate cash receipts from telegraphic tolls on messages transmitted over the lines in this division, from 15th to June 30, 1879, were one thousand seven hundred and seventy-nine dollars and seventy-four cents, of which amount eight hundred and forty-eight dollars and seven cents were receipts for this line, and nine hundred and thirty-one dollars and four cents were received to be paid to other lines.

The amount of free business not charged for the period was estimated at one thousand two hundred and ninety-two dollars and twenty cents.

Washington division.—On December 28, 1878, the work of constructing a line in this division was commenced. The work, carried on in winter, was retarded by rough roads, severe cold weather, and frequent snow-storms. The parties employed were distant from any depot of supplies, without shelter for animals, the forage procured with difficulty, and the transportation almost unserviceable for line construction. As late as the month of March it was reported almost impossible to distribute the supports along the route. The work of settling the line supports commenced at Dayton on May 1, 1879. For part of the route it was necessary to cut through rock. The span necessary to cross Snake River is one thousand one hundred and eighty-four feet long. On June 25 the line was completed to Lapwai (Fort Lapwai), and on July 1 the office was formally established at that station. The citizens of the various towns through which the line passed have displayed interest in the progress and materially aided in its construction.

The length of the line from Dayton to Lapwai is sixty-eight miles. At Dayton there is telegraphic connection to the Pacific coast.

Under the provision of the act of Congress approved March 3, 1879, the lines in the Northwest have been extended from Fort Ellis to Fort Assinaboine, on Milk River, to Fort Missoula; from Fort Lincoln to Fort Bennett, on the Missouri River; and from Fort Bennett to Fort Meade.

In Dakota Territory, a total distance of eight hundred and sixty-nine miles. It is hoped further to extend these lines to connect through Fort d'Alene with the Pacific-coast system, now extending from Fort Lapwai westward, during the ensuing year. In the Texan division the lines have been extended from Fort Sill, Ind. T., via Forts Reno and Supply to Fort Elliott, Tex., a distance of two hundred and seventy miles.

This rapid extension of all the lines has been made possible by the energetic assistance rendered by the local military authorities, by whom the transportation of material has been largely furnished. The troops at the several posts have performed most of the manual labor of constructing the line. Without such help the small appropriation available would not have furnished the desired telegraphic communication.

The Chief Signal-Officer proposes, in the next annual report, to make mention of all officers who have been commended for services in the construction of these lines. The list is not yet complete.

The difficulties surrounding the work of construction and the management of these lines have been before referred to. At the inception the undertaking was a new one; the appropriations small; the country difficult; a force had to be provided and organized to work the line.

were in construction; the laws controlling understood; the service was subject to interpositions wholly unwise. It was not understood that this kind must grow slowly.

then that the difficulties of the construction, these lines, limited to a single wire, extended through wildernesses, in sparsely-settled territories threatened always by Indians or other hostiles, much greater and not at all to be compared with commercial lines, following railways, existing settlements, and with every appurtenance at hand instantly by rail, along the lines, for their repair, if they chance to be damaged. It is, however, the settlers in this wilderness and upon the distant urgent appeals are forwarded, both that examined and that additional lines may be constructed and located by law, and it is for the commercial protection of these regions that the importance. It is an absolute necessity for the future that these regions be penetrated.

effort to lessen. It is better understood in terms of telegraphic lines to be worked at all times.

The laws of the United States and the ordinances are more closely obeyed. Illegal and disorders are less frequent. It is better comprehended by the people, and commercial or official business from one State to another, ought not by possibility to be interrupted by any subordinate authority.

The rapidity of the working of these lines, made by comparison with other lines under different management, and similar in character, have given satisfactory results. The lines improve steadily. When it shall be found that with better knowledge of their usefulness repair parties, sufficient in number and provided with material at depots so distributed as to be accessible, there will be no reason why these lines should be interrupted more than very brief periods. It is impossible to avoid frequent brief interruptions any line constructed. It is in view to double the wires as rapidly as the powers of the office will permit.

The duties of this office require reports from all lines three times daily in the regular discharge of their duties, and causes an inspection more frequent, than that had on any lines not under similar management.

, succeeding as it has under the tests to which it has been subjected, by the practical uses of such supports constructed, has shown a great advance in line construction. It is estimated that the importance to the United States of the telegraphic lines and material for line construction capable of being extended everywhere.

telephones at this office and on the sea-coast posts and stations near main lines may have been put in operation over those lines which has been hitherto

There are no constructions more economical, or returning, by their use, more fully their value to the people and the Army of the United States than the electric lines now stretching among the frontier posts and settlements.

The office is again called upon to acknowledge the courteous and prompt aid with which the wishes of the Secretary of War have been met on the part of division, department, and district commanders, and the zeal with which the working parties of troops by them detailed have performed their duties.

In the different works of construction, important assistance has been rendered by Lieut. Gen. P. H. Sheridan, commanding Military Division of the Missouri; Brig. Gen. O. O. Howard, commanding Department of the Columbia; Brig. Gen. A. H. Terry, commanding Department of the Dakota; Brig. Gen. E. O. C. Ord, commanding Department of Texas; Major Brevet Brig. Gen. Edward Hatch, commanding District of New Mexico; and Brevet Brig. Gen. O. B. Willcox, commanding Department of Arizona. The work would have failed in much of its success, but for the powerful aid.

The military results foreshadowed as to follow the construction and use of these interior lines are already in part attained. The reports of officers commanding campaigns, or employed in other operations, evince at once the wisdom with which these added facilities for communication have been employed, and the success of operations to which the rapid communication so secured have, under their direction, contributed.

The legislation of Congress has evidenced the confidence of that body in the propriety of such works, by imposing upon the Corps more labor in the new line-construction than can, with its present limited force, properly be performed. The want of skilled enlisted men can be but poorly supplied by temporary details. The Chief Signal-Officer recommends an increase in the enlisted force of the Corps as a measure of economy.

In closing this report the Chief Signal-Officer again refers to the frequent rehearsal of facts hitherto stated in preceding reports upon the service. The annual reports of the succeeding years, rehearsing, as they must, similar facts of organization and of service, become more close repetitions of the preceding reports, to which are added, each year, statements of progress as relate to the year present.

The Chief Signal-Officer anticipates the best results to the Signal Service from the legislation of 1878. There could hardly have been an adviser for the interests of the service or more just to the members of the Corps than the favorable action of Congress has removed difficulties which have hampered the progress of the duty for years. If its work is permitted to go on as it has been planned, and is fairly sustained, it can hardly fail in continued success. There ought to be just provision for the permanent employment and grades of the officers of the corps. It is recommended this be fixed by legislation. It is hoped there may be no failure in the appropriation for the service of the amounts estimated for this year. They have been estimated with careful economy.

The progress of the service through the years of duty past has been attended with steady and satisfactory success. There is no longer question as to the useful preannouncement of meteoric changes. The plans extend more broadly in each succeeding year, by which to aid in every interest of commerce and of agriculture. The popular confidence and support have been unchanging and considerate. A world-wide study has been developed, and aims to attain results not contemplated a few

hich was incident to their residence at an overcrowded hotel and to the strangeness of most of their number to one another, to the duties which were expected of them, and to the methods by which these duties could be satisfactorily discharged. They would suggest that it would conduce to the convenience of future Boards of Visitors if a compilation of the laws and important facts in the history of the Academy were prepared as a guide for their inquiries. Such a board ought not to be obliged to search volumes of pamphlets, some of which are not readily accessible, in order to gain the information which is necessary to the discharge of its functions. At best, the short period of time allotted to its sessions is severely taxed by the novelty of the subjects which its members are called to consider. These difficulties have been encountered by the Board of Visitors in previous years, and from time to time have been somewhat freely discussed. The question was more than once raised during our conferences whether the reappointment for one or two years of one or two members of a previous board would not facilitate the transaction of business and give greater weight and efficiency to the recommendations that are made. The Military Academy cannot expect and ought not to desire to be withdrawn from public scrutiny at a time when all established institutions and systems of education are severely criticised, a system so old and peculiar as that of this Academy must encounter constant and often unfriendly animadversion. It will be challenged at every turn, and must be prepared to give an answer to every questioner, whether he be friendly or hostile. In such a condition of public feeling it may sometimes be difficult to decide whether superficial and ignorant criticism or indiscriminate laudation will do the greater injury. Any special occasion of jealousy towards it, whether political or military, cannot be entirely disregarded. In this condition of opinion it may not only be desirable but imperatively necessary that its theory of education should be thoroughly canvassed by its intelligent friends of education, that its merits should be vindicated and its defects should be freely confessed and exposed, and so far as impracticable be speedily remedied. It is in this spirit that we have conducted our examinations and made our inquiries, and as the result we submit the following statements and suggestions:

1. *Buildings and grounds, including barracks, mess, lighting, and hospital supplies.*

We find that the cadet barracks are, in general, well fitted for the purpose for which they were designed, but are insufficient to accommodate the corps. Several of the rooms are necessarily assigned to assistant instructors in tactics. Other officers are quartered in the cadet barracks by reason of the insufficiency of quarters for them elsewhere at the post. Such occupancy has been allowed for over thirty years. The consequence has been that for many years three cadets have been crowded into several rooms which are fitted for two only. To provide for the maximum number of cadets likely to be present on the 1st of September next one hundred and sixty (160) rooms would be required, were two allotted to each. The number of rooms at present available is one hundred and thirty-six (136), twenty four (24) additional being imperatively needed. The board would urgently represent that although a few of the rooms are slightly larger than the others, none of them are sufficiently ample to accommodate three inmates, and that the reasons are manifold, especially in view of the arrangements within the rooms and also of the peculiar life of the cadets, why no more than two persons should be placed in a single apartment. The barracks were completed twenty-eight years ago, and at that time were sufficiently large; but the

The grounds of the post are generally in an excellent condition. We recommend that the most liberal appropriations should be made and the most unremitting and attentive care should be exacted in promoting the growth of the trees by furnishing generous nutriment and also by cutting away any growth which is excessive or promotive of dampness, also in opening any thickets or undergrowth which might serve as hiding-places for any decaying or offensive matter. This last is of special importance in its relations to the health of the cadets while in their annual encampment.

2. Fiscal affairs, including accounts, expenditures, and needful appropriations.

The accounts of the disbursing officer and of the treasurer of the corps of cadets have been carefully examined by the committee designated for this duty, who report that they are kept in a satisfactory manner. They submit an abstract furnished by the disbursing officer of the receipts and expenditures for the year ending June 10, 1879 (Appendix B). This contains a statement of the amounts appropriated for the year under several heads and also of the amounts expended under the direction of the superintendent. They also submit a statement by the treasurer of the corps of cadets (Appendix O) of the receipts and disbursements on account of the same. They add also a special communication from the same officer (Appendix C), explaining the so-called cadets' quartermaster's fund and the cadet subsistence fund.

3. Government, including organization, police, discipline, and drill.

The board see no good reasons for recommending any changes in the laws and regulations which govern the institution. Their wisdom has been tested by time and experience and the necessities of the military profession and the soldier's life. They believe also that the traditions of the Academy, or its unwritten law, sustain and enforce the virtues of truth and honor with an energy and impartiality which deserve the highest commendation. They regret to be obliged to add that the virtue of courtesy toward the stranger and the unprotected, which has been generally accepted as emphatically soldierlike, is now and then grossly dishonored in the treatment of members of the newly-admitted classes. They are happy to find evidence that the present superintendent has sought to temper his military authority by a wise discretion in the administration of discipline, in such a way as to soften the rigors without weakening the force of military rule. They find evidence that he is sustained in this wise policy by the members of the academic board and believe that during the seventy years of the history of the institution there was never a time where its discipline was more wisely administered and the spirit and aims of the officers and cadets were deserving of higher commendation. At the same time they desire to reaffirm a truth, which is easily overlooked in any educational institution, perhaps most easily in an institution under military law—that the personal influence of the men who administer its instruction and discipline is of greater consequence than its regulations and its penalties.

There is one point in the exercise of discipline which needs to be carefully guarded and that is the authority of the academic board. So far as the authority or influence of this board is related to the instruction and examination of the cadets or the determination of their rank and place in the corps, its decisions should, in all cases, be final, it being understood as a matter of course that the superintendent concurs in the same. Whatever discretion any superior, civil, or military officer may find occasion to exercise, the mitigation or reversal of any of the decisions of the teaching corps which concern the intellectual perform-

the intellect, and that its drill and manifold exercises are more than mere physical gymnastics, such as might be required for health or enjoyed as pastime, but that they involve fatigue, exposure, and the waste of a reserve of nervous energy which might otherwise be expended in intellectual activities. Most of all, they should remember that the pupils who are received are required to be masters only of the merest elements of a so-called English education, and need not necessarily have been subjected to any considerable intellectual discipline.

As a professional school, it must have a fixed and enforced curriculum. Whatever changes might be advantageously made in the studies pursued or in the time allotted to each, it is self-evident that every officer in the service needs to master all the studies which any curriculum can find room for, and that the genius of military life would require that he should be constantly measured with his fellows. Whatever advantage any student might derive from his previous studies or from his earlier discipline, would naturally appear in the easier and more thorough mastery of his appointed work, or in the prosecution of additional reading and study. It does not follow, however, because the Academy is necessarily a professional or technical school, that it does not also impart a very effective intellectual discipline. No intelligent man can doubt that it does who has observed the average cadet as he enters and as he leaves the Academy. While all this is true, it is a question which in the judgment of the board deserves serious consideration, whether the course of study might not be essentially improved in the proportions allotted to the branches now pursued, and by the introduction of other studies. They would suggest that the German language be substituted for the Spanish as being one of the foremost languages of science in all its branches, the military included, and as furnishing an excellent discipline for understanding and writing English with intelligent judgment. It would seem as though botany, zoölogy, and physiology, both animal and vegetable, were as instructive and as useful for the officer as mineralogy, and have almost as near a relation to geology; while it is essential that the prominent facts and the most important lessons of history should be wrought most thoroughly into the memory of every officer. We hail with great satisfaction the indications that general and military jurisprudence are recognized as necessary to the education of every graduate, and we trust that a special chair will very soon be permanently assigned to this department, to which the constitutional history of the United States might very properly be attached. We are constrained to add that although the severe mathematical discipline of the curriculum, in a certain sense, is also a discipline in logic, yet if it were possible to find a place for a thorough study of induction and deduction, with an ample praxis of the analysis and criticism of arguments, it would make the cadets better reasoners and writers; and if introduced before the middle of the course, might facilitate their progress in both scientific and liberal studies in the later years.

The arrangements for instruction are in many respects admirable. The division of the classes into small sections, including as they do never more than twelve pupils, each of which is assigned to a recent graduate as an assistant to the professor in charge of the department, the supervision and constant visitation of each section by the professor himself, with liberty at any time to take the work of instruction out of the hands of his subordinate, the ample time allotted to each exercise, together with the careful work required of every man and the weekly publication of his relative standing, the gradation of the sections as higher and lower, and the constant shifting of the cadets from one to the

large prerogatives, is to be carefully avoided and guarded against. Lectures such as are recommended, it hardly need be said, should be followed by rigid examinations, either oral, or of the notes taken by the pupils, one or both, for which there is ample force in the numerous assistants provided for the professors.

The board would also recommend that immediate attention should be given to the inquiry whether more formal and systematic arrangements may not be adopted, in addition to those already provided in the schools of artillery, engineering, and ordnance, for the advanced education and culture of all the graduates of the Academy during the additional four years for which they are especially enlisted. They would urge that if practicable, special examinations should be held for all without exception once or twice during this term of service in studies and reading entirely prescribed, and particularly that special inducements to engaged studies should be furnished to the assistants who are detailed for service at the Academy. They are gratified to learn that the superintendent has already initiated arrangements for voluntary activities of the kind last mentioned, and would welcome them as the indications and promise of more complete and formal efforts towards a systematic course of general and special studies for all the graduates.

The apparatus and appliances for instruction are in general all that is required, and in good condition. The department of drawing needs appropriation for tables and other conveniences such as might be wanted at any time on the recommendation of the superintendent. The departments of philosophy and chemistry, jointly, have pressing need of a thermodynamic motor, which they might use in common, and which would cost \$3,000. This might have been purchased long ago by accumulating the joint savings from the sums annually set apart to each of these departments for apparatus, did not a statute require that any portion of such appropriations which is not expended within the year should be covered into the Treasury. The board would also call attention to the necessity of special conveniences for systematic and thorough instruction in swimming as imperative and immediate.

Many of the criticisms and suggestions already submitted will have suggested the inquiry which has often been raised, viz, whether the subjects and methods of instruction can be materially improved so long as the conditions of admission and method of appointment remain unchanged. This inquiry has been the theme of frequent remark by the Board of Visitors and the friends of the institution, as also the kindred question, whether the time of curriculum might not be extended with advantage. In respect to the last inquiry, we would call attention to the fact that the experiment of a five years' course has been tried and abandoned more than once, and has apparently not justified the anticipations of its friends. It is also the deliberate conviction of many who are minutely conversant with the workings of the institution that a period of four years is long enough for an enforced curriculum of so severe and monotonous a character.

The methods of selecting and appointing new recruits and the qualification for admission which should be insisted on, open a wide field for inquiry. Your board have already adverted to the fact that a very considerable portion of the first year of the course must be spent in acquiring the very elements of knowledge and in training to those intellectual habits which every elementary education more or less perfectly attains. This disadvantage is the more serious in view of the fact that the education, when complete, is necessarily very largely professional,

at the restrictions involved in a military *régime* cut off the cadets free companionship with young men of their own age. Moreover, these cadets whose previous education has very great advantages in the competition more than just to the young men themselves, that the cadets should not only enter military life with the best possible preparation, but that they should prosecute these studies on equal terms as is possible. The truth can only be repeated that the Academy exists for that its sole design is to find and train those who will prove to be the most accomplished and able, and seem to be a self-evident truth that the selection of the most promising of its youth who are patriotic and their lives in its defense against foreign invasion. That method of selecting the best may only be the best which enables the country to select its citizens who are animated by this spirit, that a fair examination, open to all who submit themselves to its tests and the subsequent military life, is the best method of making the country know such an examination should be committed to its competition. We contend that the conditions prescribed should be such as to service and honor, and that the selection should be which shall be impartially applied. It is that which is practicable should be made to be fair and impartial. The limits of age, the method of testing capacity and promise, and of guarding against favoritism, are particulars in respect to which we expect to reveal increasing wisdom and ability, but the principle remains unshaken, to select the best of its youths who are willing to serve, and until the country can execute its plan its choicest citizens must both suffer

from applying these principles to a radical change in its organization for the higher military service of the nation, and that such a change would render the military service more efficient, and thereby to enlarge and elevate the military service. Under the operation of the present system the military corps of instructors are necessarily giving instructions in those branches of knowledge which are taught in the public schools of the country, and the curriculum suffers by comparison with the liberal culture of young men of the country. The fact that in some respects this institution does not relieve it from this infelicity. It can be conceded that its pupils should not be content with the elementary knowledge as is now the case, but that it should be as much as the graduates of our highest public schools.

which at present prevails, briefly stated, the military academy is filled by the President of the

PAPERS ACCOMPANYING THE

ted States from the country at large. The remaining places are assigned one to each Congressional district and Territory and the District of Columbia. These assignments are made by the Secretary of War, at the request of the Representative from each district, to a *bona fide* resident. An alternate may be selected at the same time, who may be examined for admission at the same time with the primary, and take his place if he fails and the alternate succeeds. Most of these appointments are made at the discretion of the Representative, with no opportunity for any competition between those who might be desirous of the place. In a few but increasing number of cases the Representative makes his recommendation after an examination which is open to all applicants within the law. This examination, from the nature of the system, is limited to the intellectual qualifications of the applicants. The defects and evils which attend the working of this nomination system, the appointment of cadets, without opportunity for competition and without examination, are suggested and confirmed by the following inductive facts. By a reference to Appendix F of the present report, and also to E of the report for 1877, it will be seen that the proportion of the cadets who are appointed to the number actually admitted is reasonably large. This points to a radical defect in the prevailing modes of selection and appointment. It will be seen, moreover, that the number of those rejected by the medical examiners is very much smaller than of those set aside for intellectual deficiencies. It will also be seen by an inspection of Appendix D, report for 1877, and Appendix E report for 1879, that the proportion of those rejected in many if not all of the States for intellectual deficiencies in no way corresponds to the relative facilities for popular education which are generally supposed to exist in these States. An inspection of the same forces us to conclude that no uniform method is adopted in the districts generally, or in any groups of the same, whether limited by States or sections of the country. The consequences of these numerous failures are serious and only evil. The Representative who designates a candidate who is not to be admitted at the entrance examination, or who is turned back before the first year is finished, deprives his district of a representation in the Academy during a part and perhaps the whole of an academic year; and perhaps longer. It is conceivable, even, and it is sometimes in fact, that several districts in the same State should fail to be represented for a series of years in consequence of the failure of the nominating agent to select a candidate on correct principles and by appropriate tests. To what extent this has actually occurred may be ascertained by a comparison of Table C, appendix to report for 1877, with a summary of the number of cadets from the several States actually entered in the official registers of the Academy for the corresponding years. A careful study of the graded rolls of the cadets for the last ten years, we believe, justify the conclusion that a very large proportion of those who attain special eminence have had special advantages for study and intellectual discipline before they entered the Academy. A few, by dint of energy and perseverance, associated with extraordinary natural talents, have been able to overcome their early disadvantages. A very large number, however, of those who have been discharged after entering would never have suffered the disgrace or misfortune of failure had they been tested by a competitive examination before their district was supplied. The Representative who nominated them would have been spared the mortification of having made an unfortunate appointment. The officers of the Academy would have been spared the odium which, though often unjust, is none the less real, and which is visited

ed that when the Academy was founded, and especially when it was ed substantially upon its present footing, it was both intended and xted that it should be a training school for all the officers who ld be required on a peace establishment. It was also anticipated by being a school of instruction for all these officers it would indily become a school of instruction for the officers for the largest army h would be required in a time of war. These anticipations have or e not been fulfilled. If they have not, there is something radically ctive in the organization or the administration of the Academy f. If they have, there is no occasion to abandon the original theory o the method of recruiting the casualties that regularly occur. ry great war must, of course, add valuable officers of every grade he permanent force of the Army who will have been admirably xated in the school of actual service, whose qualifications no one ld question, and whose well-earned honors the country is forward kknowledge. But the periods for the existence of training schools of description have, happily for the country, been infrequent and brief, no one can desire that they should be otherwise. There can be no on, then, why upon a peace establishment the country should not rn to its original theory and continue to supply its skeleton army i officers who are trained at its own Military Academy. The eleva- of subordinate officers to higher positions without the preliminary ntific mastery of the studies which are deemed essential to suc- by all military men cannot be possible or desirable except within r narrow limits. The introduction of any considerable number ounting men from civil life into the corps of officers without any ial military education and with no previous training to hardship, sure, and agility in the school of the soldier, and no scientific ure in the school of the officer, must lower the tone of the pro- on and be fraught with other evils. It will inevitably tend to de those who should be animated by one spirit into two rival es which will be alienated in their feelings as they become competi- for the honors that should be reserved for exceptional services. se jealousies will be likely to be most active at those critical moments h are most important in the history of the nation.

is obvious, also, that if appointments are made in large numbers i men in civil life, there is reason to fear that they will be made for ial political services, or at least on the ground of party services or y allegiance. Should this be the case, it would inevitably follow political feeling would become more active and more distinctly rec- zed among the officers, and that promotion and appointments would oligated and given on the ground of political sympathies. Nothing d be more disastrous to the *esprit de corps* which has characterized Army hitherto, than the introduction of such divisive influences by h the officers would be arrayed against one another in two opposing ons that would grow and gather strength by the abundant material hich they would feed from within, and by active stimulants from out. It has hitherto been a point of honor and of etiquette with the t of our officers to abstain from the active expression of political ngs or preferences. They have been sometimes severely criticised use they have seemed to be so indifferent to the movements of the t wars of political feeling which periodically agitate the nation's

Perhaps it will be discovered that that is not one of the least sal- y of the traditions of West Point which has trained them to the ciple of abstinence and reserve. The evil, if it be one, will rather

by the introduction into the Army of a corps of men with traditions and sympathies that of an institution which must be strong in its character even, if it is to be sturdy in its honor and its self-sacrifice.

The number of trained officers that is at present will be still further diminished by the reduction of the number of cadets who may be admitted. The original design of the provision made could not have been fully understood but that the number should be diminished. Especially for the sons of persons in the military service, and whose tastes and aspirations would follow the profession of their fathers, and also for those occupations in life, especially their officers, from acquiring a legal or permanent residence in the district. Such nominations should of necessity be distinctly specified. Whether or not they are made to, the board cannot doubt that whenever a decision of the Army shall have been decided to be made for the increase of the corps of cadets, it will be found necessary to supply the casualties among the officers. The value of this institution is too strikingly demonstrated to the country to remain uncorrected or its influence to be limited by the duties which they have performed. They have adopted, the members of the board have been entirely agreed in their warm approval of the Military Academy to our national peace and excellence of its system of education and training is that its efficiency should be increased and its culture be extended to all the officers of the country should decide ought permanently to be

in any way only, can the country be assured that it is not from without, or within, it will have such can promptly and energetically animate the ranks of patriotic men the nation shall summon

has been submitted for the Board of Visitors.

NOAH PORTER, *President.*

DORMAN B. EATON, *Vice-President.*

HENRY L. ABBOT, *Secretary.*

OF WAR.

**REPORT OF THE BOARD OF COMMISSIONERS OF THE
SOLDIERS' HOME.**

OFFICE OF THE BOARD OF COMMISSIONERS OF THE
SOLDIERS' HOME, ROOM — WINDER BUILDING,
Washington, D. C., October 21, 1879.

SIR: I have the honor to submit the annual report of the Board of Commissioners of the Soldiers' Home for the year ending September 30, 1879, as required by the Regulations for the Home, Article I of which directs that the Board "at their meeting in October will make an annual report of their proceedings to the Secretary of War for the information of Congress."

At the monthly meetings of the Board all the members have been present, and the accounts of the treasurer for the preceding month have been audited at each meeting.

The condition of the buildings and grounds has been such as to require but few important changes during the year and no extraordinary repairs.

During the first part of the year covered by this report a permanent surface drain was laid from a point near the northwest gate, along the west line, to a point connecting with the natural drainage to the lake, near the principal entrance to the grounds. This work was necessary for the protection of the stone foundation of the fence on the west line, which would have soon been undermined by the flow of surface water from the western slope gathering at the base and confined inside the line instead of spreading as it formerly did through the old fence.

Early in the spring of this year a new drive was constructed in the extreme southern portion of the grounds upon a survey made last year to complete the circuit by the south avenue and avoid a portion of the drive passing an unsightly corner containing an old gravel pit and the *débris* gathered from fallen timber, &c.

The Home cemetery was enlarged this season by extending a stone wall on the east side and connecting with it a substantial fence enclosing all the ground to the extreme north point of the Home property. Within this new addition, and bordering immediately upon the old cemetery, was a large excavation made to procure gravel for walks and drives. This has been filled and graded and for the most part plotted uniformly with the old cemetery. A great portion of the ground is covered with a fine growth of native hard-wood trees, and it can be made with comparatively trifling expense an exceedingly beautiful and fitting place for the purpose it is intended.

In the month of June last a three-inch water-supply pipe was laid from the steam-pumps to the "Home farm" buildings, providing for sufficient water on the farm for all purposes.

All needed repairs to fences and buildings have been made. They have been chiefly of exterior painting, &c., required for their preservation.

In the government of the inmates, and in the measures taken for their happiness and welfare in every respect, no changes of system or regulation have been made. All matters in this respect within the control of the Commissioners and the officers of the Home have been satisfactory.

The officers of the Home have been attentive and efficient in the discharge of their duties. No changes have occurred in the roster.

vs the following changes:

as September 30, 1878.....	567
year:	
.....	123
.....	39
.....	75
	<hr/> 801
ence without leave, &c.:	
.....	168
.....	29
.....	4
.....	31
	<hr/> 232

as September 30, 1879..... 569

very respectfully, your obedient servant,
J. K. BARNES,
S. A., *President Board of Commissioners.*
WAR.

DEPARTMENT OF STATE, WAR, AND NAVY DEPARTMENT BUILDING.

BUILDING FOR STATE, WAR,
AND NAVY DEPARTMENTS, OLD BUILDING,
DEPARTMENT, SEVENTEENTH STREET,
Washington, D. C., July 1, 1879.

submit the following report of operations
of the building for State, War, and Navy
for the fiscal year ending June 30, 1879:

REPORT OF THE NEW NAVY DEPARTMENT.

For the last fiscal year, operations looking to
completion of the building at the earliest possible
close of that year with all the energy that
force of 525 men employed at that time was
used, and the working force was at all times
efficiently handled. Tables showing the num-
ber of contracts in force during the year are

shown in the progress of the work during the year,
under a few general heads:

CAST-IRON WORK.

Foundry frames and trimmings were essentially
completed in the middle of the autumn, although the very
last work was not until December 24. This work constituted
the greater part of the construction of the building, and
was very hard and tedious. The total weight of cast-
iron amounted to 545½ tons. All the washboards

id stairstrings are of cast iron, about one-fourth inch in thickness, and are secured to the brick walls with expansion bolts. This work was commenced on the 1st of July, 1878, continued as rapidly as the contractor could turn it out, and was completed on March 1, 1879.

The cast-iron ornaments for the three pediments of the pavilion roof on the east front were secured in their places between July 18 and August 9. They were then at once thoroughly painted and sanded.

The iron work for the dome of the main stairways was much delayed in the contractor's hands, the first delivery not being made until August 27. This consisted of a portion of the wrought-iron framework and orders for carrying the cast-iron work, which constitutes the entire dome, including all its ornamentation, even to the light sash containing the glass of the skylight. The girders with their upper connections sustain also a narrow marginal flooring in the attic around the skylight, capable of carrying a heavy load of any articles likely to be stored there to the extent of 200 pounds per square foot. The framework was in place and the attachment of the cast-iron shell of the dome was commenced on October 1. The whole was completed and ready for painting on December 4. The architectural and ornamental features, as well as the construction of this dome, were designed in this office.

HEATING AND VENTILATION.

As shown by my last annual report, the heating apparatus was mainly in place at the close of the last fiscal year, and most of the ventilating registers were ready for the registers.

On the 15th of August the heating apparatus, being on the hot-water system, was filled with water for the first time. Fires were lighted in the furnaces on the 22d of the same month, to test the condition of the immense number of joints in the apparatus and the circulation of the water, with an entirely satisfactory result in both particulars. But few joints or valves required any tightening or repacking, and this being immediately done, the apparatus was ready for use. The suspended system of main flow pipes was covered in the month of December with a non-conducting coat of asbestos board, hair felt, heavy paper, and canvas, applied over each other in the order mentioned.

MAIN STAIRWAYS.

The last stone of the main stairs—so nearly completed at the close of the last fiscal year—was set on the 18th of July. It was necessary to wait the completion of the plastering and other rough work before the hand-railing and balusters could be safely erected upon the stairs and landings. The railings of mahogany had been commenced the previous June, and were ready to go in place about the first of December, at which time it had been expected to have on hand a sufficient number of balusters (bronze) to commence setting them up. A contract was made for the balusters, including the bronze hardware for the building in general, on the 19th of the previous September; but none of the balusters were received at the building until March 26, and then only a very small number. The erection of the railing was at last begun on the 20th of April, and has been continued to the present time as fast as the balusters were delivered. At this date there are still lacking one baluster for the first story, and the two newel posts for the basement story. The railing has been finished and polished, however, down to these points. The contractors for the bronze work seemed to labor under un-

while the nature of the work rendered it inexpedient to cancel the contract and procure the work elsewhere and newel posts were designed in this office.

PLASTERING AND STUCCO WORK.

Stucco work was well under way at the close of 1901 and was continued vigorously in all its branches and was essentially finished, about February 1. Commenced in the fourth and attic stories, and the work continued throughout the building in the usual manner. Plastering was begun on September 28, and in the main stairway

and other stucco work was completed on January 1, 1902, on the elevator landings. All branches of this work were completed by the workmen at the building, all the plaster ornaments were made and finished there.

For the cornices and moldings and the plaster ornaments on the similar work in the south wing, in order to secure uniform design and style of finish throughout the interior and exterior of the building. This will render the work feasible through from wing to wing entirely practicable and desirable.

WOODWORK AND FLOORING.

The building consists, besides the flooring of rooms, hallways, and water-closet finish. The latter is generally of mahogany—the doors of the attic and the finish of the cellar water-closets.

This work was got out by hand in the shops during the winter and was put together and into place during the late fall to avoid the natural heat of the building. For this purpose the furnace was kept running at a suitable temperature from the time the building was completed and turned over to the

work was begun in the fourth story on October 3, and in the attic on November 30. Laying of the cement floor was begun on August 23, and finished September 16. The work in the Secretary's room on the second floor was completed for that work on the 17th of March, and was in the building before it was turned over to the

GLAZING.

In the door transoms in the building the glass used was 1/2 inch thick, and the best British polished plate glass being used only in the windows of the sub-base throughout the remainder of the building. All the window sashes to the weather had been set in place during the summer. On September 26 the glazing of window-sash was completed throughout the building, and was mainly completed throughout the building to close it against the winter weather. The leaded glass of the skylight over the main stairway

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set during the month of March, and was finished on the 28th of the month.

TILING.

Excepting the cellar or sub-basement story, all the floors of corridors, water-closets throughout the building, and also the floors of the upper attic, were tiled. The material used consisted of marble from quarries at Swanton, Vt., excepting the black tiles and borders in the corridors and stairway landings of the attic; the former consisted of black slate tiles—a surplus from the construction of the south wing—and a part of the latter being from Glens Falls, N. Y.

All the tiles are twelve inches square by 1 inch in thickness, and are alternately white and black, well bedded in hydraulic cement tar. The work was commenced on September 17, in the north corridor, and progressed as rapidly as other operations would permit, until it was finished early in January, except the elevator landings, which were tiled later. The area of tile flooring is about 21,000 square feet, nearly half an acre.

PAINTING AND HARD WOOD FINISHING.

This branch of the work was carried on in its proper order and with unusual care, furnishing not only a most durable protection to the iron and wood work, but bringing out the ornamentation of the one and the natural beauty of the other in a pleasing degree. All the iron work received five coats of paint besides a thin wash of light color on some of the raised parts.

The materials used included about 3,400 pounds of red lead, 3,700 pounds of white lead, and 460 gallons of raw linseed oil; figures which furnish a basis for a rough estimate of the great extent of surface to be treated.

As all the iron-work was delivered at the building unpainted there was no difficulty in applying the priming coat of red-lead paint, as was done, in a thorough manner.

The heavier part of the painting and finishing was done during the early winter months, but it was not entirely completed until the middle of April. The dome of the stairways was painted and decorated by a regular force on the building in the early part of the winter. The painting and decoration of the Secretary's room and the four communicating rooms north and south of it was performed under contract between the 5th of February and the 3d of April.

PLUMBING.

My last annual report showed that all the principal pipes for the water and gas supply and for drainage had been put in during the previous calendar year. The work remaining to be done consisted, therefore, of the plumbing proper, namely, the placing and connecting all the water-closets, urinals, wash-basins, slop-sinks, and bath-tubs, and supplying them with water, hot or cold, or both, as the case might be.

The Demorest water-closet was used throughout the building except in the sub-basement, which was provided with plain hoppers and automatic spring-valves.

There are two apartments on each of the six floors of the building apart for water-closet uses, each of which contains four closets,

g that should be unremittingly practiced with every apparatus to which human life and limb are intrusted.

The preliminary work of getting the elevators into place was commenced on the 7th of November. Foundations for the engines in the lar were commenced on February 18, and steam was admitted for the t time on the 26th of March. Everything, including the gallery nts, annunciators, and gas-lights, was fully completed on the 11th of ril.

LIBRARY.

This large room, situated on the fourth floor, in the center pavilion, nains unfinished, owing to the complicated and special nature of its sign. Considerable time was necessarily consumed in the preparan of detail drawings and the models of ornamental work. All the hitectural, ornamental, and constructive features were designed and aged in this office, excepting the encaustic tiled floor, the original den of which was somewhat modified to suit that of the lowest comitive bidder.

The walls, ceilings, gallery-flooring, and book-cases will consist entirely cast iron, with marble panels and a skylight of white ground glass. The general arrangement of space embraces one large central room, o stories in height, surrounded at the second story by a gallery, and nmunicating through archways on the north and south sides, in each ry, with alcoves containing the book-cases and the hand elevators ich connect the stories.

In the month of February, the wrought-iron girders, framework, and asses to carry alcove partitions were put in place. There are four vvy main girders, running east and west from wall to wall, for carrying e ceiling and the attic flooring. This flooring may be safely loaded th a weight of at least 150 pounds per square foot.

Proposals for the cast-iron work were invited on the 31st of Decemr, but owing to the delay in the passage of the appropriation the conct was not entered into until March 5. The erection of the cast-iron rk was commenced on the 11th of June, and is now progressing idly.

COURT-YARD, AREA WALLS, COAL-VAULTS, ETC.

Preparations for the following-described court-yard work were made the close of the last fiscal year. The necessary excavations were ben on July 22, but suffered considerable delay from long-continued wet ather. The concrete foundation of the south-wing area wall was ben on September 11, the brickwork of the vaults of that wing on September 25, and the setting of stone on October 16, by which time simiparts of the walls and vaults of the east wing were well undery. All of the masonry and the earth covering of the vaults was npleted by the last of November. The iron stairs and hoists were t up during the winter.

On June 23 the laying of an asphaltum pavement, with a base of hydraulic cement concrete, was commenced upon the surface of the north d south court-yards lying over and near to the coal-vaults and steam-iler rooms previously built. Damage to the contractor's works by e at that time has delayed the completion of the pavement until now, t it is expected to be finished in a few days. The thickness of the phaltum is $2\frac{1}{2}$ inches, and of the concrete base 6 inches.

The capacity of the coal-vaults of the south wing is 200 gross tons, d of each set of vaults for the east wing 150 gross tons.

much of all this work as fell immediately opposite the rear wall of the south wing was paid for by the State Department from an appropriation available for the purpose; the cost being, for walls, coal-vault stairs, and hoist, \$8,960.50, and for the asphaltum pavement \$1,577. The last item covered 243 square yards, equivalent to one-third of the surface of the entire south court-yard, and is, therefore, one that the State Department should ever be called upon to pay for the final paving of the court-yards of the building.

APPROACHES AND DRIVEWAYS.

Completed the sidewalk, steps, and parts of the stone building at the entrance, the fences on the east front, and the foundations therefor. It was all well started in the last fiscal year, but was delayed somewhat through the non-arrival of cut stone from the contractors.

The granite and blue-stone flagging arrived on August 2, and the masonry was finished as rapidly as possible. The entrance was set on November 8, and the sidewalk was put up and resetting to true grade of that part belonging to the building, was finished on November 27.

The hand-railing, to consist of a single rail with three feet of manufacture for each of the four low stone platforms of the driveways from the basement corridor. The rail is of heavy brass pipe and fittings, and the railings will be completed in a few days.

The fence was put up between the 10th and 14th of December, and sodding the included plats were done in the early part of January.

Completed the work of laying an asphaltum and hydraulic cement in the driveways from the curbstone of Executive Avenue to the court-yards was commenced, and finished on the 10th. About this time the six candelabra posts were put up, and the lanterns put up early in April.

On June 9 the surface of West Executive Avenue, extending from the north gateway nearly to the east entrance of the State Department, was coated with good gravel, 12 inches in thickness, to the center line, and well rolled. At the same time the gutter near the new curb was paved.

CLEANING DOWN STONEWORK.

This is a long and tedious operation, which included pointing of the joints. It began on the 7th of October, was suspended during freezing weather, and finally completed on the 15th of April.

IN GENERAL.

It was noticed that the sheet-copper lining of the gutters on the corners of the court-yard walls, although laid with all the usual care with the older connections, frequently gave way in the joints and leaked. Accordingly, a copper lining was devised and substituted for the old one, which will doubtless overcome the difficulty. It consists of strips of copper made up of large sheets brazed together and connected to the roofing copper and to the edge of the coping by means of rivets. No sign of leakage has been discovered since the installation.

ovement was made some two months ago, nor in one trial-section which was laid in December.

A temporary covered bridge to communicate between the second story of the old building for the Navy Department and the first story of the new building was constructed in the latter part of March.

The labor needed in the several branches of direct construction or fitting materials together in the building was generally employed by the United States, under skilled and careful foremen; by which means workmanship of uncommon accuracy, strength, perfection, and durability throughout was obtained. Accidents to workmen and materials have been, for the same reason, rare, and generally unimportant—a noteworthy fact when the many hazards attending their movements on a large scale and the tendency of workmen to become careless from familiarity with danger are considered.

At the request of the Navy Department, the Bureau of Steam Engineering was permitted to have the use of the northeast attic store-room and the south curtain from about the 1st of November. They at once fitted up the room with shelving, and commenced on the 7th of November to remove thence their record-books. By the further request of that department, effort was made to finish the long room on the court-yard side of the third story south, as far as possible, in advance of other rooms, for the benefit of the same bureau. This bureau commenced to move in their furniture on the 13th of January, and took possession with their corps of draughtsmen on the 19th of March.

It was expected at the close of the last fiscal year that this wing of the building, exclusive of the library, would be made ready for occupancy by March 1, 1879; but owing to a reduction of the hours of labor during nearly six months of the time, to conform with the similar action of the Navy Department at its yards, one month's extra time was consumed upon the work. Although essentially ready on the 1st of April, the date of full completion, excepting the library and handrailing of the main stairs, was unavoidably further delayed until the 15th of April, by the tardiness of the contractors for furnishing gas-fixtures and mantels throughout the building, and the marquetry-flooring in the Secretary's room. On the latter day, however, the work of thoroughly and neatly repairing up and locking the corridor-doors of the building was finally completed to await the time for delivering the building into the charge of the War and Navy Departments, which were to occupy it together pending the construction of the north wing. In the afternoon of April 15, 1879, the building was formally turned over to the Secretaries of War and Navy, and the keys deposited in their possession.

PROBABLE OPERATIONS FOR THE FISCAL YEAR 1879-'80.

As shown by the foregoing report, the library and main stair-railing are the only pieces of unfinished work pertaining to the construction of the east wing. The stair-railing will be entirely finished as soon as the parts wanted are received, probably in two or three weeks. Nearly all the material required for the completion of the library has been contracted for and is in active preparation. It is expected to finish the work early in the coming fall.

No further appropriations are required for this wing of the building.

As large a force as could safely and advantageously work together was employed until the last brick or other vestige of the old building was removed on the 16th of June.

But comparatively little of the old material thus gained could be of service in the construction of the new building. Only a portion of the bricks would be fit to lay in the permanent walls, owing to their variable sizes and degrees of hardness, and the cost of culling and cleaning. Some of the old timber, piping, slates, and window-sashes were preserved for temporary use in the new work. The material was, therefore, piled in separate lots on the ground south of the building, while that suitable for filling only was utilized in grading of the grounds south of the Executive Mansion.

The regular excavation for the foundation of the north wing was commenced on the 17th of June, and is nearly half finished at this date.

A large supply of materials for the concrete foundation is being collected, and the necessary machinery for mixing the concrete and for working the derricks is nearly ready for use. The derricks themselves are ready for raising, and all other appliances and materials required for the work are ready or being procured in good season.

During the fall of 1878 a complete study was made of the system of heating and ventilating this wing, and the results incorporated in the plans, so that every necessary preparation and precaution for the accommodation of the boilers and the numerous pipes, flues, and air-ducts required may be observed in the beginning and continued upward with the work. The system of heating will be the hot-water one now in successful use in the south and east wings.

* * * * *

PROBABLE OPERATIONS FOR THE FISCAL YEAR 1879-'80.

Having on hand the large supply of cut stone, above mentioned, for the lower stories, and other preparations having been made on a large scale, it is expected to have the masonry completed to the water-table or first-story floor by the close of the present working season. It is also expected that the balance of the cut stone required to carry all the walls to the top of the first story will be delivered this season. Between the opening of the next working season and the close of the fiscal year it is expected that the masonry of the first story will be completed.

All the masonry drawings and other office preparations for the further continuance of the work will be made as usual, so that the next appropriation will find everything in readiness for its immediate application to direct construction of the building.

ESTIMATE OF COST.

The estimated total cost of the north wing, given in detail in my last annual report, amounted to \$2,192,414.40, based upon the then existing prices. It is probable that some items would now be found too low, and others too high; but that the sum total will not be materially exceeded if appropriations are made regularly, so as not to impede operations, or the preliminary business necessary thereto.

STATEMENT OF FUNDS.

Total amount expended to date on north wing	\$560,713' 92
Balance on hand at this date.....	457,900 11
New appropriation desired for the fiscal year ending June 30, 1881.....	1,600,000 00

The amount asked for will be needed for the preparation of cut stone and for iron-work for partitions and door and window frames and trimmings, in addition to the labor of construction.

Conclusion, I have to state that the office for the construction of building was removed on the 29th of May, 1879, from the building southwest corner of Seventeenth and F streets to rooms on the half of the first floor of the old building for the Navy Depart-

THOS. LINCOLN CASEY,
Lieutenant-Colonel, Corps of Engineers.

GEO. W. McCrARY,
Secretary of War.

IMPROVEMENT OF THE SOUTH PASS OF THE MISSISSIPPI RIVER.

ARMY BUILDING,
New York City, September 23, 1879.

I have the honor to forward this day by express my manuscript (or twelfth) Report on the Improvement of South Pass of Mississippi River, with the following charts to accompany:

1. Chart of the end of jetties.

2. Chart of the end of jetties.

3. Chart of the end of Mexico to 100 feet depth; seaward of the end of jetties.

4. Chart of the end of Mexico to 300 feet depth; seaward of the end of jetties.

5. Chart of the South Pass from South Pass Light-house to Bayou Grande.

6. Chart of the South Pass from Bayou Grande to head of Pass.

7. Chart of the works at head of Pass.

8. Chart of the jetties, curves, &c.

9. Chart of the jetties, &c.

10. Chart of the charts accompanying the eleventh report; but as

included with that publication, it is again forwarded,

I request that this chart, together with all that are sent

published with the twelfth report, as they are of much

importance, and very necessary to a clear understanding of

Very respectfully, your obedient servant,

M. R. BROWN,
Captain of Engineers, U. S. A.

GEO. W. McCrARY,
Secretary of War, Washington, D. C.

Through Brig. Gen. H. G. Wright, Chief of Engineers.)

NEW YORK, September 23, 1879.

GEO. W. McCrARY,
Secretary of War, Washington, D. C.

Through Brig. Gen. H. G. Wright, Chief of Engineers.)

I have the honor to present herein a report of the progress made in the improvement of the South Pass of the Mississippi River under the direction of Mr. James B. Eads, by virtue of a contract made with him by the United States in the acts of Congress approved March 3, 1875, and amended by the acts of June 19, 1878, and March 3, 1879.

This report is annual for the year ending June 30, 1879, and is besides the twelfth in order of inspector's reports.

asmuch as I have heretofore presented a report, the eleventh, bringing all data up to about April 1, 1879, it will be convenient to the reader, subservient to clearness, to quote from that report such portions as naturally be used in describing parts of the work of the year, without entailing much prolixity, and to condense certain other portions of the eleventh report, following in a measure the order there indicated for work done from July 1, 1878, to April 1, 1879.

The channel from South Pass Light-house to deep water in the Gulf of Mexico is shown in Nos. 1 and 2 of the accompanying charts, as it appeared according to surveys made from June 11 to June 14, inclusive. At the head of South Pass the soundings were made July 10, in South Pass July 17, and in Northeast Pass July 22.

Progress in construction from July 1 to August 6, 1878.

From July 1 to August 6 the work of construction accomplished was as follows:

ON THE EAST JETTY.

From 176 to 576 feet from East Point Station, a length of 406 feet, the stone forming coping of the jetty was closely and smoothly packed, the mass having a crowning section, with a width at base of about 14 feet. The middle line is about 2 feet above average flood-tide.

From 2,520 to 3,225 feet from East Point, 705 feet, a layer of loose willows about 23 inches wide, and generally from 2 to 4 feet thick, was placed quite level, and mostly over 2 feet above average flood-tide. Over that portion of this layer, between 5 and 3,130 feet from East Point, stone was piled 1 foot in depth, with a width of 1 foot. The stone, as in all cases, compressed the loose willows, as well as those in upper mattresses, until the stone itself had an elevation above average flood-tide from 2 to 2½ feet only.

ON THE WEST JETTY.

From 6,700 to 6,900 feet from pile No. 1 (at the junction of the west jetty with the jetty called Kipp's Dam), 300 to 400 cubic yards of stone have been roughly piled. Wing-dam C, projecting from the west jetty, has six mattresses added in the third, fifth, and sixth tiers next the jetty; 15 cords of loose willows were also superposed on the sixth tier, and about 225 cubic yards of stone were used in the repairs, the upper tiers being ballasted with stone in about the usual proportions. It rises to about 2 feet above average flood-tide, considerable having sunken through the mattresses.

Wing-dam C, projecting from the east jetty, has five mattresses added near the jetty, above them stone was placed with a depth of about ½ foot. In this case, and in many other localities throughout the jetties, the stone has sunken down through the mattresses, very greatly compressing the confined willows, and pressing loose willows, wherever present, into the bodies of the mattresses.

By August 6, the yellow fever had become very deadly at Port Eads, and all work was suddenly and almost completely suspended until cold weather should appear.

I lost my capable second assistant, Mr. Parmley, who died of the disease August 9. Only the acclimated were retained at Port Eads, and the United States party was so greatly reduced that only the indispensable work of caring for the sick and disposing of the dead could be continued to regularly. A union in one party of all at Port Eads qualified to aid in a survey enabled me to obtain charts of the shoalest portion of the bar occasionally. These surveys are all the data we have of the channel depths over the bar in the summer and much of the fall 1878.

Depths available for navigation, summer and fall of 1878.

The surveys show the following-named navigable depths over the bar and beyond end of the jetties: July 2, 22.5 feet; September 6, 22 feet; September 25, 23 feet; October 11, 24 feet; November 2, 23 feet; November 13, 23 feet; December 6, 23 feet; December 28, 23 feet. Over the bar at the head of South Pass the ascertained depths were as follows: September 4, 21 feet; September 16, 21.8 feet; October 7, 22 feet; November 1, 22 feet; November 14, 22 feet; and December 5, 22 feet.

the first of the new year, and the building of the blocks, mixed by hand, was commenced. The corresponding structures of the west jetty were ready for use, by hand-layers of mortar, about the last of January. February 1 an elevated railroad over the east jetty was commenced. This is in bays of two piles each, about 10 feet apart, supporting a track on girders about 9 feet above average flood-tide. At the end of the jetty the span is reduced to 5 feet. This railroad was extended to the end of the jetty about April 1, and at that date a similar railroad over the west jetty was well advanced towards completion. On each of the tracks a small home-made locomotive has been placed, constructed from various pieces of unused machinery on hand. These are used in transporting small dump-cars, containing the mortar after it has been thoroughly mixed. When the car is over the moulding-box which has been built on the surface of the jetty, the load of mortar is dumped about an axis into this box. The mortar is made sometimes with the following named proportions of ingredients: sand, 3 parts; gravel, 3; stone, $8\frac{1}{2}$; cement, 2. Considerable difficulty has been experienced in obtaining gravel in sufficient amounts. When none is available, the following proportions are used: Sand, 7 parts; stone, 16; cement, 3; the stone is broken to small pieces equivalent in size, perhaps, to a block 2 inches on each edge. These ingredients are wheeled up an inclined plane and dumped into the hopper of the mixer, which is an iron box having the capacity to hold about 7 cubic yards, suspended above a platform by a horizontal axis passing through a diagonal diameter of the hopper. This axis is hollow, and water, held by a reservoir above the box, is admitted through hollow journals into the box, as fast as it is needed to give proper consistency to the mortar as its elements are being incorporated by the revolution of the hopper, which is effected by steam-power through a boiler and engine on the platform below. The car being backed under the hopper as soon as the mixture is perfect, generally in about five minutes after the first revolution, the door of the box is opened, and the mortar falls into the trough of the dump-car.

The blocks at the beginning measured 16 feet along the axis of the jetty, 8 feet in width and 3 feet in height. As the blocks settle somewhat at first, the earlier ones have been built up, until on the east jetty they have an average elevation above average flood-tide of 2.75 feet, and on the west jetty they are 2.25 feet above the same line.

On the east jetty, July 1, 1879, the blocks began at Station 93.96, or 396 feet below East Point, and extended to Station 116.33, 11,633 feet below—a length of 2,237 feet, comprising 125 blocks.

On the west jetty, at the same date, the blocks were in place from station 88.97 to Station 116.59, or 2,752 feet by actual measurement. This length was made up by 154 blocks.

Only the sides and tops of the boxes are taken off after the blocks have become sufficiently hardened, which requires about a week; most of the blocks then resist quite heavy blows with a hammer, without damage. The action of the waves on the seals at first roughened the blocks, but since then the sides have been protected by an iron of stone piled against them and inclining downward to the water in a plane of face. The solidity of the blocks is increased by tamping the mortar as it is dumped into the mould, and a few large stones are inserted into the mass. The top of the block is, in the end, overlaid with fine mortar, composed of equal parts of mortar and sand.

The dimensions of the blocks of cement-stone in place July 1 are as follows:

East jetty.				West jetty.			
Station.		Width.	Thickness.	Station.		Width.	Thickness.
From—	To—			From—	To—		
3 + 96	96 + 16	4.5	3.5	88 + 97	91 + 27	4	3.5
	101 + 8	5	3.6		95 + 53	4.5	3.5
	101 + 97	6	3.3 + 7		101 + 10	5	3.5
	103 + 38	8	3.5 + 10		101 + 80	6	4 + 1 ft.
	104 + 68	8	4.2 + 13		106 + 80	8	3
	106 + 85	8	3		110 + 80	9	3
	110 + 87	9	3		111 + 86	10	3
	113 + 15	10	3		113	10	3.5 + 05
	115 + 31	11	3.6		114 + 12	10	3.5
	116 + 33	12	3.8				

1 holes battered into them, each about 7 feet long and 3 feet deep, throughout their thickness.

The damage to the jetties was soon thoroughly repaired, as follows: a two broken blocks at the end of the cement work were blasted and broken into small pieces and distributed as ballast. Their places were supplied by two new blocks, after the foundation had been made sure. The four blocks which had merely been displaced angularly were forced into their normal beds by jacks suspended from above, and the foundations beneath them were remade substantially with macadamized stone and gravel. The three blocks which had been partially eaten away in holes were repaired with fresh concrete, the bond between the old work and the new being apparently good. About 1 foot of concrete was superposed on each of these three blocks to raise their level to that of the adjacent work.

Considerable stone was driven into the sea and lost from the jetty during the same storm. Some of it may be recovered, as much has been that has heretofore been temporarily lost from the jetties. The steep slopes are made very gentle in such cases, and the base of the jetties at and near the bottom is widened, rather than that anything is actually abstracted from the jetties.

SINKING OF THE JETTIES, ESPECIALLY OF THE CEMENT BLOCKS.

In the eleventh report, I remarked as follows:

The bench-marks which have been used in determining the level of the upper surface of the jetties have mostly disappeared; mattresses have sunken or have become covered by mud or rock, or have disappeared, until it is impracticable to ascertain to what extent the jetties sunk from July 1, 1878, to January 1, 1879. As soon as the fact could be ascertained, preparations were made for commencing a new set of comparisons.

Sufficient time has not elapsed to make results at present attainable of much value, but hereafter the blocks of cement-mortar will be frequently observed, and for my next report I hope to be able to give data, showing the amount of subsidence of the entire length of the jetties for the months from February to July, 1879. This will be practicable if the bench-marks remain in place.

Every effort has been made to obtain data which should enable me to ascertain the rate of depression throughout the entire jetties. At extreme low-tides heavy uprights were firmly attached to such mattresses as in the top tier of mattresses as could be reached higher upstream than the origin of the cement-blocks. But these have broken off, or have tipped over, or have sunken, until no reliance can be placed on their faces as bench-marks, and I have been reluctantly compelled to abandon for the present the endeavor to trace the vertical motion of the upper surface of the mattresses. They lie so far under mud and water and rock that the identification of bench-marks on them seems impracticable, and of course bench-marks on the overlying stone would be worthless. But since the earliest cement-blocks were laid down sets of levels have frequently been taken on them and connected with bench-marks on shore.

To illustrate the results, I remark that in April the mean result for blocks on the east jetty was a depression of less than one-third of an inch of a foot, and for 43 blocks on the west jetty just three times as much, the blocks on the west jetty being much the newer ones. Thus it would seem that at present the blocks seem to be sinking at an average rate of from $\frac{1}{2}$ foot to 1 foot yearly; but it is during severe storms that most of the depression occurs, and as this depression is somewhat proportional to the violence of the wave action, the sinking resulting cannot be uni-

t a more commensurate appropriation has been made by Congress, a second steam hch has been bought, and it is proposed in the fall to enlarge my party sufficiently llow its division into three sections, each under a competent head. he survey of the entire pass is needed once each year, and, if practicable, this work l be done. I give here the results of one set of observations for the discharge of th Pass at Falconer's, near the head of the pass, made February 22, 1879. discharge of 68,363.02 cubic feet per second was shown.

WORK OF THE DREDGE BAYLEY.

This dredgeboat reached Port Eads from New Orleans June 3, after y extensive repairs, which have greatly increased its efficiency. The charge pipe is not now conveniently accessible for the purpose of aging her performance, but the evident impression easily made in moving mud, &c., in a short time, while working to slightly widen and open the 26-foot channel in a few places, and to make the 30-foot nnel in a few localities where it was lacking, shows a capacity for rk greatly beyond her former performance.

At the same time it is evident that if there were a decided tendency shoaling on the bar, caused by the deposition of coarse sand, which the only sediment retarded and deposited here by the river in times the flood stage, the work which could be accomplished by more than a such dredge as the Bayley would be insufficient to keep open espectable channel, comparing the probable result with the present p outlet.

USE OF A SCOURING DEVICE.

While the Bayley was undergoing repairs the 25-foot channel had an nearly obtained, and it became important to slightly widen and open the channel in one place to secure the important result. In this ergency a scow was fitted up with a set of long levers, of about 8 h round stuff, which moved about a journal as a fulcrum, supported t abaft the stern of the scow. At the after end of these levers, far ern of the scow, there was attached an apron on a frame at an angle about 60 degrees, with the levers so arranged that when the levers re rotated about the journal the apron's frame should touch the bot- n, leaving an interval between the bottom of the pass, and the lower d of the apron, for the escape of the water, which, diverted by the ron, is forced down its inclined plane through this interval and over a bottom with great velocity, thus scouring away the mud and sand. The device was successful, and the desired width and depth were soon tained.

PURCHASE AND SALE OF BOATS.

During the year the new towboat Ella Andrews has been purchased d also thirteen-sixteenths of the old tugboat Brearly, while the Graf- 1 and the Piasa, larger boats, have been sold.

THE CHANNEL THROUGH THE BAR AT THE MOUTH OF SOUTH PASS.

By the 1st of July, 1878, Mr. Eads had obtained a channel 22 feet ep and 200 feet wide. Since then, up to July 8, 1879, he has obtained er channels as follows: At the mouth of South Pass, March 27, 79, a channel 24 feet deep and over 200 feet wide; April 7, 1879, a annel 25 feet deep and over 200 feet wide; June 18, 1879, one 26 feet ep and over 200 feet wide; and July 8, 1879, a channel 30 feet deep hout regard to width.

on, substantially, until December, 1878, when the task of building up this dam was commenced.

The project contemplated the continuance of the construction until 25 or 26 feet of water should be available as a channel, instead of about 31 or 32 feet originally existing over the site of the mattress-sill. That project has been executed as follows: the single tier of mattresses formerly laid down (elsewhere than from 300 to 625 feet from the west shore, where a second layer has been superposed on the first), second, third, and fourth tiers have been constructed.

The condition of the dam is now as follows: The first tier is 2,843 feet in length; on it is a layer of mud about $1\frac{1}{2}$ feet thick. The second tier commences 365 feet from the west shore and contains 38 mattresses, extending to a point 1,855 feet from the west shore, or 1,490 feet from its beginning. The third tier commences 475 feet from the west shore, contains 34 mattresses, and ends at a point 1,310 feet from its initial point. A fourth tier, beginning 475 feet from the west shore, contains 9 mattresses in length of 315 feet, and ends 790 feet from the west shore.

From the westerly end of the third and fourth tiers to the west shore the wall has been extended to the shore-line by adding loose willows, ballasted with stone, so as to present an elevation of 2.25 feet above average flood-tide. This was partly built in December, 1878, and finished in January, 1879. Loose willows, amounting to 740 cords, and 150 cubic yards of stone have been used in this extension. The new mattresses of this submerged dam are 63 feet in length and sometimes 33 and sometimes 35 feet in width, about half of each size. They are laid with the longitudinal axis parallel to the current in such a manner that each tier overlaps on the up-stream side, about $\frac{1}{2}$ its length, the one on which it rests. Most of them are thinner at each short edge than elsewhere, being about 1 foot thick on the down-stream edge and 3 feet thick at a distance of $\frac{1}{2}$ the whole length, above whence they again diminish to a thickness of 1.3 or 2 feet at the up-stream short edge. Some of them are uniformly 2 feet thick for $\frac{2}{3}$ of their length, diminishing to a thickness of 1 foot at one edge. It is assumed that the weight of the up-stream projection will cause the overlap to sag down, giving a slope on both edges in any case. Averaging, about 12 cubic yards of stone were used in ballasting each of the mattresses. In the construction 2,750 cords of willows and 1,040 cubic yards of stone have been used.

DAM NO. 5.

This dam, extending across the old east channel between the island and the east shore, has been improved by the addition of 743 cords of loose willows and 353 cubic yards of stone, which has left the surface about $1\frac{1}{2}$ feet above average flood-tide, and the body of the dam is in good condition.

DAM NO. 3.

This extends from the west T-head to the shore near the light-house. A tier of loose willows ballasted with stone has been placed on the mattresses. A plank walk has been added to its surface leading to the east shore of the light-house.

EAST T-HEAD.

The wall is mostly in shoal water, and previous to this year the only work remaining in place was one tier of mattresses for the upper half of its old length. This tier is double, one range on each side of the guide-piles. The late work previous to April 1879, began at a point 500 feet below the junction of the T-head with dam No. 2, and extended to this junction. Here 10 mattresses form a second tier, and over them loose willows are laid and ballasted with stone until the work has an elevation of about 2 feet above average flood-tide.

Below this, extending to the island, loose willows and stone alone have been used to give the T-head about the same elevation.

THE NEW EXTENSION OF THE EAST T-HEAD.

Above the junction of dam No. 2 with the east T-head the old apron-mattresses are so covered and useless that they have been ignored in constructing the new work, and they may be disregarded in this description.

The new work is as follows: The lower arm of the T-head below dam No. 2 is continued above that point, nearly in the same line, 785 feet;

it is produced up-stream 1,215 feet in an arc of a circle having a radius of 2,255 feet, the convexity towards the channel.

The foundation tier consists of 26 mattresses, some 30 and some 38 feet long, laid with their longer axis nearly to the right angle of the axis of extension, thus serving as an apron to mitigate scour.

At a distance of 470 feet from dam No. 2, the structure is above average flood-tide. For the first 270 feet of this length, including the foundation tier, there are 6 tiers of mattresses and a layer of loose willows; for 200 feet farther there are 4 tiers of mattresses and a layer of willows. This whole length of 470 feet is lined on its channel side by upright mattresses, boarded on the inner side, whose lower ends rest on the foundation mattresses. For 315 feet farther up-stream, 785 feet from dam No. 2, there are three tiers of horizontal mattresses, though for short distances there are successively two

On the uppermost of these, as a higher foundation, mattresses, boarded on one side, their upper edges some 3 feet above flood-tide and their lower edges resting on the middle surfaces, about 7 feet below the same plane, averaging 10 feet from the end of the T-head, 1,215 feet higher up, or 2,000 feet from dam No. 2, there is of horizontal mattresses only the foundation tier; and the longer axis of this part of the extension is on which rest tilted mattresses, nearly upright, from their lower ends to their thickness. The upper edges of all these tilted mattresses are 3 feet above average flood-tide.

THE UPPER DAM, OR NEW DAM.

From the up-stream terminus of the T-head extension starts a new extension nearly at right angles to the T-head. It extends towards Northeast

Its foundation is 1,880 feet long. As first constructed, the foundation consisted of two wide or broad ends with an intermediate narrow portion. The wider ends were built by placing the mattresses on the bottom so that their ends should abut and their longer axes lie in the direction of the axis of the dam. For 66 feet in length there were two mattresses, giving a width of 126 feet. For 99 feet farther there were three mattresses, spreading out the base to a width of 189 feet. Thence, for 455 feet, the width was about 125 feet in two mattresses, and then came a long stretch of 1,020 feet having a single mattress 43 feet across dam. For the easterly 340 feet the line of mattresses was double, giving a total breadth of 116 feet to this portion of the foundation. These mattresses were nearly of the usual width. On the easterly end of this foundation a superstructure was laid as follows: Second tier, 2 feet thick, 43 feet wide, and 441 feet long, of seven mattresses, began 25 feet west of the line of the T-head, and 115 feet east of the starting point of the foundation. Third and fourth tiers, of the same number of mattresses, overlaid all but 15 feet of the length of the second tier, this terrace being at the westerly end. The third tier is 43 feet wide, and the fourth 33 feet wide, thus terracing the sides as well as the ends of the structure.

Then tilted board-bottom mattresses were then placed on edge on the fourth tier, as a foundation, with their ends abutting, their upper edges being about 3 feet above average flood-tide.

At the eastern end of the dam, over the length of 340 feet, forming the easterly abutment of the dam, five tiers of horizontal mattresses extend over 245 feet, leaving at the extreme end an extension of the foundation about 90 feet long. The lowest of these four

tiers is 35 feet wide and the highest 23 feet wide. The fifth tier's upper surface is within 1.5 feet of average flood-tide, and this is the top of the dam here.

Between these two abutments the dam consisted at first of 16 tilted mattresses, 2 feet thick, with board bottoms, or, rather, with a board side, their widths so adjusted to the depth of the water that the upper edge shall be from 2 to 3 feet above average flood-tide. They are from 16 to 19½ feet wide. Their lower edges rest on the middle line of the foundation or apron tier.

After this dam had been nearly finished, it was found that the foundation was being rapidly undermined in several places, and it became necessary to check this action at once, lest the whole structure should be endangered.

Mattresses of special sizes and shapes were constructed to fit holes in and under the foundation tier, as revealed by soundings. It is unnecessary to describe these. In all, 15 specially constructed mattresses were sunken, and afterwards a second foundation tier was sunken on them, covering a part of the width of the original foundation and 1,020 feet of its length between the abutments, as I have designated them. A second row of tilted mattresses was then placed edgewise on this new foundation, on the up-stream side of the original dam, the whole making in effect a second dam above and in contact with the first, comprising 30 mattresses in the foundation, and in the subfoundation to fill holes, and 10 boarded tilted mattresses on the flat foundation. The undermining ceased, and the condition of the dam and of the whole east T-head was very good July 1, 1879.

A large area, included between the new dam, Dam No. 2, the east T-head extension, and east dike, is fast filling up with accumulations of sediment, during the present low stage of the river. What will be the effect of a great and sudden rise in the river we have little data to prophesy on.

About 5,373 cords of willows and 862 cubic yards of stone were used in the two new structures at the head of the pass during the year.

All other constructions not referred to in this report are in a condition quite good enough for the purposes they serve.

DEPTHS OF THE HEAD OF PASSES.

In the eleventh report, depths in Southwest Pass and Northeast Pass, ascertained in March, 1879, were compared with depths found in March, 1878. I now compare soundings made, some in March, 1878, and some in March, 1879, with those taken July, 1879. A line over Southwest Pass mattress-sill gives mean depths 23.9 and 24.8 feet, respectively, indicating a deepening or depression of the mattresses of 0.9 feet in four months. Two hundred feet below this sill the mean depth was 30.76 feet in March, 1878, and 30.36 feet in July, 1879, a shoaling of 0.4 feet in 16 months.

In the Northeast Pass one line for comparison is 550 feet above its sill, and a second 600 feet below it. In the first case the deepening is from a mean depth of 25.45 feet in March, 1878, to 25.84 feet July, 1879, or a scour of 0.39 feet in 16 months. In the second case a shoaling from 29.1 feet in March, 1878, to 26.8 in July, 1879, or of 2.3 feet in 16 months, appears.

In order to determine the locations and amount of tendencies to changes of depth in the channel at the head of South Pass since April, 1878, two imaginary lines were drawn on this chart and that of July 10, 1879, so as in all cases to be 200 feet apart across channel. These inclose, in each instance, about the best water for navigation at the respective

Within these lines reaches are considered, each 500 feet long, the soundings being distributed nearly uniformly, a mean of all in each reach is ascertained. The results of the comparison are in the following table:

Distance from Sta. Cluster.	Mean depth of reach—		Increase of depth.
	April 12, 1878.	July 10, 1879.	
feet above.....	22.9	26.6	2.7
200 feet above.....	25.9	26.2	0.3
feet below.....	27.1	31.5	4.4

CERTIFIED STATEMENTS OF DEPTHS.

There will be found herein all the certificates of depths that have been during the year, including those which formed the basis of claims for compensation for obtaining the 25, 26, and 30 feet from these there can be ascertained the minimum depths at both the head and mouth of South Pass at various dates, from the most careful and accurate surveys.

These were forwarded to the New Orleans Times, Picayune, and Price-Current. Each statement was certified to as follows:

I certify that the above is a correct statement.

M. R. BROWN,
Captain of Engineers, U. S. A.

Witness my hand and seal:
Issued by order of the Hon. Secretary of War.

UNITED STATES ENGINEER OFFICE,
Port Eads, La., June 23, 1879.

January 20, 1879, there was a practicable channel at least 23.9 feet deep at average flood-tide and at high-water of the day through the bar at the end of South Pass jetties, and nowhere throughout the pass, except over the bar at the Head of Passes, and at low-tide of at least 21.4 feet deep at low-water of the day.

January 22, 1879, at Head of Passes the least depth of channel at average flood-tide and high-water of the day was 22.1 feet, and at low-water 20.6 feet.

January 19, 1879.—Over the bar at the mouth of South Pass, on the 13th of February there was a channel at average flood-tide and at high-water of the day having a depth of 22.2 feet, with a width of 200 feet. At low-water of the day the least depth was 21.2 feet.

March 15, 1879.—Over South Pass bar the depth of water at average flood-tide, March 9, was 24.8 feet. The least width for this depth was 80 feet.

At high-water of the day the least depth was 25.4 feet, and at low-water 23.8 feet. At head of Passes March 3 least depth of channel at average flood-tide was 23 feet, at high-tide 24.5 feet, and at low-tide 23.3 feet.

April 14, 1879.—Statement of the depth and width of the improved channel at the mouth of South Pass April 7, and of the channel at the head of South Pass April 11.

I certify that a channel existed on the 7th day of April, 1879, at the mouth of South Pass 25 feet deep, and in no place less than 230 feet wide on the bottom, between the shallow water of the pass and the deep water of the Gulf of Mexico; also, that on the 11th day of April, 1879, there was at the head of South Pass a channel sufficiently wide for navigation, having a least depth of 24 feet, and that the 23-foot channel at the head of Passes had nowhere less width than 125 feet.

May 13, 1879.—Through the bar at the mouth of South Pass, May 13, 1879, there was a practicable channel at average flood-tide and at high-water of the day a practicable channel, having a depth of 26 feet. The 25-foot channel was 140 feet wide in its narrowest place. At the head of South Pass May 3, 1879, the least depth of the channel at average flood-tide was 24.2 feet; the length of channel having a less depth than 25 feet was 1.5 miles.

At high-water of the day the least depth on the bar at head of South Pass was 25.5 feet, and at low-water 25.1 feet.

June 19, 1879.—At the mouth of South Pass, June 14, 1879, there was at average

PAPERS ACCOMPANYING THE

At low-tide and at high-water of the day a channel having a least depth of 26 feet for a length of 205 feet in its narrowest part. At the same time there was a navigable channel 28 feet deep in its shoalest part. At low-water of the day these depths were increased 1.2 feet.

At the Head of Passes, June 17, there was, at average flood-tide, a navigable channel having a least depth of 2.44 feet.

July 10, 1879.—At the mouth of South Pass, July 8, there was, at average flood-tide, a navigable channel having a least depth of 30.5 feet from deeper water in South Pass to deeper water in the Gulf of Mexico. At high-tide of the day this depth was 30 feet and at low-tide 29.7 feet.

At the Head of Passes, July 10, there was, at average flood-tide, a navigable channel having a least depth of 26 feet.

Specifies as bases of payments to Mr. Eads for obtaining the 25, 26, and 30 foot channels, respectively.

PORT EADS, LA., April 10, 1879.

GEORGE W. MCCRARY,
Secretary of War:

(Through Lieut. Col. H. G. Wright, Acting Chief of Engineers.)

Statement of the depth, width, and extent of the improved channel at the lower end of South Pass, Mississippi, April 7, 1879.

I certify that on the 7th day of April, 1879, the channel in that portion of South Pass between the South Pass Light-house and the deeper water of the Gulf of Mexico, affording a passage through the bar near the jetties' ends, had in its shoalest part a least depth of 27 feet, and that throughout this extent the 26-foot channel had a least width of 150 feet, and the 25-foot channel a least width of 230 feet.

M. R. BROWN,
Captain of Engineers, U. S. A.

JUNE 19, 1879.

I certify that on the 18th of June, 1879, there was a channel at the mouth of South Pass, through the jetties, 26 feet in depth and not less than 200 feet in width at the mouth, measured at average flood-tide, and extending from a wider and deeper channel in South Pass to deeper water in the Gulf of Mexico.

M. R. BROWN,
Captain of Engineers, U. S. A.

I certify that on the 17th June, 1879, there was a channel through the shoal at the mouth of South Pass having, at average flood-tide, a least depth of 24.4 feet.

M. R. BROWN,
Captain of Engineers, U. S. A.

JULY 10, 1879.

I certify that on the 8th day of July, 1879, there was a channel at the mouth of South Pass, through the jetties, 30 feet in depth without regard to width, measured at average flood-tide, and extending from a wider and deeper channel in South Pass to deeper water in the Gulf of Mexico.

M. R. BROWN,
Captain of Engineers, U. S. A.

JULY 10, 1879.

I certify that on the 10th day of July, 1879, there was a navigable channel through the shoal at the head of South Pass, having at average flood-tide a least depth of 26 feet.

M. R. BROWN,
Captain of Engineers, U. S. A.

SEDIMENT OBSERVATIONS—MAINTENANCE OF CHANNEL.

Since July 1, 1879, Mr. Eads has been paid for obtaining the 26-foot channel 200 feet wide, and the 30-foot channel without regard to width at the mouth of South Pass, and simultaneously the requisite depth at the head of South Pass. I refer to this because the many surveys required of me in connection with the attainment of these channels have prevented the collection of some of the data desired for my annual report, and have retarded the procurement of more. Simultaneous current observations in the three passes have been necessarily deferred until fair weather.

* * * * *

DEEP-SEA SURVEY TO A DEPTH GREATER THAN FIFTY FEET.

August, 1876, a survey was made along nine radial lines, starting from the ends of the jetties and projecting into a depth of about 320 feet. This survey was made on the United States dredgeboat *Essex*; such a ship, having a long deck high above the water, is needed for such a survey within the limits of time at my disposal for the purpose. No opportunity for repeating this survey presented itself until 1879, when I ascertained that I could secure the use of the same ship for a few weeks, paying her expenses from the appropriation for the operations and surveys of South Pass. Accordingly, on the 15th of August, the *Essex*'s commander reported to me with his ship at South Pass.

Several days with strong wind offshore occurred at once, and great difficulty was made in making soundings on days when an examination of strong cross-currents, or of any cross-current, was made. The boat had to be retained fifteen days in order to obtain the necessary data for the work. The lines were very carefully run on the angles by having from three to five men simultaneously, and by running on ranges, &c. One man watched another who cast the lead, and the latter made the soundings as can be obtained, except by the slow and costly apparatus employed by the Coast Survey, losing a great deal of time.

It is borne in mind that we have very little knowledge of the bottom, and we know that this distance varies over the whole area surveyed, and that it may not be the same at certain localities at different times. Still the survey gives us the best attainable data.

The lines, which almost exactly coincide with lines sounded in August, 1876, and which divide pretty equally the angular distance between lines which inclose most of the water of the survey. They are delineated on sheet No. 4 graphically, and they show the amount of shoaling and deepening between August, 1876, and June, 1879. The lines are numbered 1, 2, 3, 5, and 11.

The entire survey is charted on sheet No. 4. Fourteen lines in all were sounded. The mean intersection of these lines with the contour lines shows that the water is 50 feet deeper by designation, that is, beginning at the 150-foot contour and increasing by successive stages 50 feet at a time until the 300-foot contour is included, will give us, approximately, the mean position of the several contours with reference to any given base. If we take only the area common to the surveys of both 1876 and 1879, we find that the first 9 lines, and in the second 11 lines. We use for comparison only 5 lines, which nearly coincide in location in the two surveys, with reference to a right-line base joining the old ends of the jetties. The perpendicular ordinates dropped from the points of intersection of the lines of soundings with these several contours give for the two surveys the following results as follows:

Movements of curves from August, 1876, to June, 1879.

Designation of contour.	150 feet.	200 feet.	250 feet.	300 feet.
Distance seaward, in feet	170	295	1,105	270
Distance landward, in feet				

uniformly as is practicable, and the mean depth of each subdivision the various dates has been ascertained.

The whole cubic volume of water divided by its surface gives us a mean depth for the whole area, and thus we ascertain, generally, the nature and amount of changes in this area.

During the last twelve months there has been a mean shoaling of 2.56 ft. In two years the shoaling is 0.76 foot.

The following table gives the comparisons at the different dates, in detail, of the quantities of water in 21 subdivisions of a fan-shaped area extending about $1\frac{1}{2}$ square miles immediately seaward of the ends of the Pass jetties.

The following table gives the movement of curves from July, 1878, to July, 1879, ascertained by measuring ordinates 50 feet apart at right angles with a base through a point in the east jetty 11,545 feet below West Point Station, the base at right angles with the chord of the east jetty terminating at same point:

Designation of curve.	20'.	30'.	40'.	50'.	60'.	70'.	80'.	90'.	100'.
Advanced seaward, in feet		9	71	257	342	283	308	329	581
Retarded landward, in feet.....	19								

Acknowledgments are due to First Assistant Engineer C. Donovan, and Assistant Thos. L. Raymond, not only for their general faithfulness and efficiency in executing the work intrusted to them, but particularly for their persistent and laborious application to the various details of the many surveys of the year and to office work, amidst the prostrating influences of climatic conditions in the swampy and malarious country which is the scene of their arduous labors.

FINANCIAL STATEMENT.

Amount available from appropriations for examinations and surveys at South Pass of the Mississippi River, August 12, 1878..	\$13,741 97	
Amount appropriated by act approved March 3, 1879.....	24,000 00	\$37,741 97
Amount expended during the fiscal year ending June 30, 1879..	8,916 60	
Outstanding liabilities July 1, 1879.....	7,577 68	16,494 28
Amount available July 1, 1879.....		21,247 69
Amount available July 1, 1878.....	\$15,000 00	
Amount appropriated by act approved March 3, 1879.....	24,000 00	39,000 00
Amount expended during the fiscal year ending June 30, 1879, as follows:		
per account of Maj. C. B. Comstock, from July 1, 1878, to August 12, 1878.....	\$1,258 03	
per accounts of Capt. M. R. Brown, from August 12, 1878, to July 1, 1879.....	8,916 60	
Outstanding liabilities July 1, 1879.....	7,577 68	17,752 31
Amount available July 1, 1879.....		21,247 69
Estimate of funds required for examinations and surveys at South Pass, Mississippi River, for the fiscal year ending June 30, 1881.		
Three assistant engineers.....	\$5,400	
One first-class seaman and two steam engineers	8,600	
Boat rent	300	
Cost of officers' quarters, i. e. commutation.....	422	
Cost of assistant engineers' quarters	240	

stante.....	\$5
.....	1, 2
.....	1, 5
launches.....	5
.....	5
.....	4
l, &c.....	3
id other contingencies, including a deep-sea	2, 5
.....	2, 5
Total	22, 3

Very respectfully, your obedient servant,

M. R. BROWN,
Captain of Engineers, U. S. A.

FORT LEAVENWORTH MILITARY PRISON.

GOVERNOR'S OFFICE,
 UNITED STATES MILITARY PRISON,
Fort Leavenworth, Kans., July 21, 1879.

to transmit herewith annual reports of the
 and chaplain, connected with this prison, for
 1879.

a tabular statement of labor performed, pri
 d, &c.

extensions of store and shop room have been
 ll be seen from the following details:

or, 1878, the building occupied as a storehouse
 of subsistence of this department was vacated
 ison. Immediately on this transfer, work was
 g, which was erected so as to connect prison
 ilding lately acquired, thus serving the double

ose of improving the appearance of the front of the prison and a
 ng more room. This new building is two stories high, and is 40 b
 et; its lower story is occupied as a store-room, and the upper one
 at present as a chapel.

addition has also been made to the building recently occupied as cor
 ry storehouse, of 100 by 40 feet, two stories high, with basement
 building is occupied as follows, viz: Upper story, barrack-room for
 l; lower story, cook-room for guard and prisoners, also dining-roo
 ard; basement, dining-room for prisoners, bakery, and scullery.

addition, of 100 by 38 feet, and three stories high, has likewise
 made to the shop building, the first floor being an extension of the
 smith shop, the second floor of the carpenter shop, and the third
 is to be used as a shoe-shop.

sides all these improvements, work has progressed on the prison
 so that now 1,517 feet are completed. Owing to the very severe
 her last winter, work on the wall was somewhat impeded, so that
 cannot report as much progress as we did last year.

is very gratifying to be able to report that the conduct of the pri
 s on the whole has been very good, and that severe disciplinary
 ures have seldom had to be resorted to. Fifteen escaped during
 ear, but seven were recaptured, making a loss by escape of eight
 e health of the institution has also been good, as will be seen from
 surgeon's report. As the embarrassments heretofore existing
 ant of the crowded condition of everything have been removed, the
 ary condition of the prison ought to be better the ensuing year than
 s ever been, unless, indeed, some unforeseen contingency arises.

Work in the different shops has been very successfully carried on. During the year 8,530 barrack chairs were manufactured, crated, and shipped to the different posts; also 40,000 tent pins; but this represents only a small portion of the work done in the carpenter-shop. There were also manufactured in the shoe-shop 51,756 pairs of shoes. We have under cultivation this year, as a prison farm, about 51 acres, divided as follows, viz: 30 acres with potatoes, 11 with corn, 3 with cabbage, and the remaining 7 acres with other vegetables, such as onions, cabbages, turnips, &c. The crops look well and promise a good yield. All this land, with the exception of 7 acres, has been fenced, cleared, and worked with prison labor.

It is noticed in the annual report of the Quartermaster-General that he has charged the prison with clothing to the value of \$9,422.21, but it is not seen that he has allowed the prison any credit for labor given his department. The inclosed tabular statement marked B shows in detail and aggregate the labor given the Quartermaster's Department by the prison and for which no compensation has been received. It would seem but fair that due credit would be given for this labor.

There is a fund of \$6,708.02 on hand, deposited in First National Bank, Leavenworth, Kans., the accumulation of earnings of prison labor. On the 19th of November, 1878, a letter dated Adjutant-General's Office, November 14, 1878, was received. In this letter a doubt was expressed as to the legality of expending any of the prison earnings without further and more definite legislation on the matter. Would respectfully inquire what disposition will be made of this money.

It will be seen from the following statement the amount of prison appropriation received, expended, and balance turned into the Treasury during the year, viz:

Summary.	Appropriation.	Expended.
Subsistence.....	\$27,922 50	\$17,439 89
Fuel.....	10,000 00	8,633 08
For bedding.....	280 00	189 54
Purchase of miscellaneous stores, stationery, material for clothing for discharged prisoners, tools, &c.; repairs and cleaning machinery; pay for foreman, mechanics; reward for apprehension and delivery of escaped prisoners, donations to prisoners at discharge.....	14,766 50	14,073 88
Repair of buildings.....	1,500 00	1,500 00
Extension to shop, new mess-room, &c.....	10,000 00	10,000 00
Completion of hospital.....	2,000 00	1,999 83
	66,469 00	53,836 22
Balance turned into Treasury.....		12,632 78
Total.....	66,469 00	66,469 00

I beg leave to acknowledge my sincerest thanks to the department commander for the warm encouragement and substantial aid which he has extended to me in every undertaking. Whatever success has attended my labors here, is very much due to his hearty approval.

It also gives me great pleasure to acknowledge my obligations to the different officers on duty at the prison for their strict attention to duty, hearty co-operation, and exemplary conduct.

I am, sir, very respectfully, your obedient servant,

A. P. BLUNT,

Brevet Colonel, U. S. A., Governor.

To the ADJUTANT-GENERAL,

U. S. Army, Washington, D. C.

(Through Headquarters Department of the Missouri, Fort Leavenworth, Kans.)

[Indorsement.]

HEADQUARTERS DEPARTMENT OF THE MISSOURI,
Fort Leavenworth, Kans., July 30, 1879.

to the Adjutant-General of the Army.
 y prison, credits should be allowed by th
 his report for work done by the prison fo
 which no money has been paid. It will b
 he Quartermaster-General that the prison i
 thing, but no credit is given to the priso
 that department.

of both debt and credit is due to the priso
 be made.

ie fact that there is a large sum in the Fir
 orth, the accumulation of prison earnings
 of which a doubt has been expressed by th
 my.

position of this money are requested.

JNO. POPE,

Brevet Major-General, Commanding.

ment of funds expended in the service of the quartermaster's department at military prison
 Fort Leavenworth, Kans., by Capt. A. P. Blunt, A. Q. M., U. S. A., in the fiscal ye
 ending June 30, 1879, on account of appropriation for that fiscal year.

	Expended.	Received
REGULAR SUPPLIES.		
Food sold to officers.....		\$258
INCIDENTAL EXPENSES.		
Pay, compensation of.....	\$1,730 00	1,730
Wagon, hire of.....	240 00	240
Total.....	1,980 00	1,980
BARRACKS AND QUARTERS.		
Paint, windows for.....	275 00	275
Primary storehouse, erection of.....	8,797 72	10,000
Total expenditures.....	9,072 72	10,275
Total amount.....	9,072 72	10,275
ARMY TRANSPORTATION.		
Wagon, hire of.....	1,200 00	1,200
Stable of Fort Leavenworth.....	3,640 61	5,836
Total expenditures.....	4,840 61	6,836
Balance on hand.....	1,986 64	
Total amount.....	6,836 25	6,836
CLOTHING, CAMP AND GARRISON EQUIPAGE.		
Base of clothing and clothing material.....	207 15	
Material, &c., for chairs and tent pins.....	3,535 55	
Wagoners' work in shoe factory.....	606 30	7,397
Work of foreman in shoe factory.....	1,880 00	
Total expenditures.....	6,219 00	7,397
Balance on hand.....	178 78	
Total amount.....	6,397 78	7,397
HOSPITALS.		
Pay of hospitals.....		155
Balance on hand.....		155
MILITARY PRISON.		
Total appropriation.....	38,579 58	38,710
Balance on hand.....	131 27	
Total amount.....	38,710 85	38,710

RECAPITULATION.

	On hand and received.	Transferred.	Expended.	Balance.
Regular supplies	\$258 00	\$258 00		
Incidental expenses	1,909 00		\$1,909 00	
Barracks and quarters	10,275 00	1,202 28	9,072 72	
Transportation of the Army	8,838 25		4,840 81	\$1,995 44
Clothing, camp and garrison equipage	7,327 78	1,000 00	8,327 78	178 78
Hospitals	155 00			155 00
Military prison	25,719 85		25,579 58	140 27
Total	\$5,092 88	2,402 28	\$9,671 91	2,402 00

Respectfully submitted.

A. P. BLUNT,

Captain and Assistant Quartermaster, U. S. Army.

UNITED STATES MILITARY PRISON,

Fort Leavenworth, Kans., July 16, 1879.

Statement of funds expended in the service of the quartermaster's department at United States military prison, Fort Leavenworth, Kans., by Capt. A. P. Blunt, assistant quartermaster U. S. A., in the fiscal year ending June 30, 1879, on account of appropriations for fiscal year 1877-'78.

	Expenses.	Receipts (on hand).
BARRACKS AND QUARTERS.		
Construction of chapel at Fort Leavenworth, Kans.	\$2,506 17	\$2,506 17

No transfers.

Respectfully submitted.

A. P. BLUNT,

Captain and Assistant Quartermaster, U. S. Army.

UNITED STATES MILITARY PRISON.

Fort Leavenworth, Kans., July 16, 1879.

PUBLICATION OF WAR RECORDS.

WAR DEPARTMENT,

Washington City, September 1, 1879.

SIR: The preparation for the publication of the official records of the war of the rebellion has steadily progressed since the date of my last report, but the amount of labor involved in examining the mass of records stored in this city, in making judicious selections from them, and in the verification of the copies made, can hardly be appreciated by those not immediately connected with the War Department.

The records of the Union armies are very complete. They have been thoroughly examined for the years 1861 and 1862, and in part for the later years of the war. The Confederate records are yet very incomplete; they are kept in insufficient space, and have never been so in-

REPORT OF THE SECRETARY OF WAR.

or catalogued that they could be systematically arranged is now being made.

War Department agent for the collection of Confederate records (Mr. Marcus J. Wright) has been successful in the discharge of his duty.

By gift or loan, many very valuable documents have been placed at the disposal of the government. The Southern Historical Society has given us free use of its important collection. The Library of Congress, of Generals Johnston and Pemberton, we have now secured. The records of the siege of Vicksburg, and the Confederate side of the siege of Atlanta and of the Carolinas. Generals Wheeler, Sherman, and others, have also placed valuable papers at our disposal. A general disposition is manifested among the ex-Confederates to contribute material for the official history of the war. There are three or four collections of "Confederate Records" in the hands of private individuals. I respectfully renew my objections to that method of collecting property. It is submitted that there is no propriety in the sale of such records. That, strictly speaking, some of the records belong to the government, and that the fact that the government has refrained from making use of them, ought to induce the present holders to permit the government to make use of them. Moreover, the price of such things is very low. The government stands ready to publish to the world any authenticated document of historical value, and documents so published must carry greater weight than those appearing in private hands. A guarantee of genuineness. If the existing rule of making no use of such records be adhered to, I believe that public sentiment will prevent any Confederate document from coming into the hands of the government. I have received many urgent solicitations from ex-Confederate officers and from the clerks in my office. The necessity for having a clerk with the personnel of the Confederate armies has long been felt, but the appropriations have not justified the employment of such clerks until now. The gentleman selected is a gentleman of high standing and was vouched for by distinguished men of both the parties.

Yet Congress has made no provision for the publication of the records. In my judgment some such publication is now necessary. The publication of the official records of the war of the rebellion, from January 1, 1861, to December 31, 1865, can be made in eight octavo volumes, including maps, eight hundred pages each, and the cost of printing and stereotyping, if the work is done at the Government Printing Office, would not exceed \$9,000. The further cost of the distribution, of course, depend upon the number of copies printed, the quality of the paper, and the style of binding. No estimate is made of the cost of the preparation of maps, because they should be prepared and published under the direction of the Chief of Engineers, and should form a part of the official records. It is suggested that any money appropriated for the publication be made available till the work is actually completed. I wish to invite your attention to so much of my report of the year 1865 as refers to the manner in which the war records should be collected, and, with all deference, I respectfully urge that a permanent system of reports of military operations, segregated from the general correspondence, orders, returns, &c., immediately connected therewith, should be adopted. It simplified the labor of the compiler, prove a most valuable arrangement of the matter to be published. The proposed system would record every military event, not only as an incident of the campaign to which it belonged, but in its own order; would give the correspondence, &c., immedi-

nected with such military events therewith; and would, as far as possible, give both the Union and Confederate versions of any event of controversy in the same volume.

I desire especially to invite your attention to the question of extra compensation to Messrs. Kirkley and Tasker, of the Adjutant-General's Office, whose special services in connection with the war records have before been brought to your attention. Their assistance in my work is extra duty to them and most valuable to my office. It obviates the necessity for another clerk in my establishment, and there seems to be a good reason for some substantial recognition of it.

The force now employed in my office is as follows:

CLERKS.

Class IV	
Class III	
Class II	
Class I	
Class \$1,000	
Copyists	

PRINTING OFFICE.

Foreman	
Pressman	
Compositors	
Assistant messengers	
Watchman	
Agent	

Total

Very respectfully, your obedient servant,

ROBERT N. SCOTT,
Brevet Lieutenant-Colonel, U. S. Army.

The SECRETARY OF WAR.

REPORT OF THE SECRETARY OF THE NAVY.

WASHINGTON CITY, D. C.,
Navy Department, November 30, 1879.

SIR: I have the honor to submit the regular annual report of the condition and operations of the Navy Department for the fiscal year ending June 30, 1879. The expenditures for that period and estimates for the fiscal year ending June 30, 1881, are included.

The condition of the Navy has greatly improved during the last year. There are now in commission 45 vessels, consisting of cruisers, monitors, and torpedo boats. Of the different classes, 16 can be put in condition for sea service in a few months, and 20 could be made ready in an emergency. With this done the fighting force of the Navy, which might be made available in a very short time, would consist of 81 vessels of all classes. And if to this number be added the 4 monitors, *Terror*, *Puritan*, *Amphitrite*, and *Monadnock*, and 8 powerful tugs, which can be fitted for either cruisers or torpedo boats, our whole effective fighting force would consist of 93 vessels. The monitors could be completed, with the necessary appropriations, without much delay. Of the vessels now used as receiving ships, 7 are unfit for any other purpose. There are 27 vessels unfit for naval purposes of any kind whatever, but which are a positive expense, as it is necessary to keep in employment a force of ship-keepers to preserve them from entire destruction. Some of them might be profitably converted into merchant vessels, and it would be economy to sell the whole; in which event I repeat the recommendation heretofore made, that the Department be authorized to use the proceeds in either building new or repairing other vessels, instead of being required, as the law now directs, to cover them into the Treasury.

SQUADRONS.

THE EUROPEAN SQUADRON.—Rear-Admiral William E. Le Roy, having been relieved from duty as commander-in-chief, at his own request, Rear Admiral John C. Howell has been assigned to the command. Since my last report the *Vandalia* and *Marion* have been withdrawn from this squadron, for the reasons then stated, and the *Wyoming* and *Enterprise* have taken their places. The *Quinnebaug* has also been added. The *Gettysburg* was found to be entirely unfit for service. Her iron plates

are very much corroded and altogether unsafe, and her machinery broken down. She was an English-built vessel, was captured while running the blockade during the civil war, and was entirely unfit for a man-of-war. It being considered a dangerous experiment to venture across the Atlantic with her, she was sold at Genoa, Italy, under the direction of Rear-Admiral Howell, for \$10,983.46, and the money has been covered to the Treasury. The ships now composing this squadron are as follows: Trenton, Wyoming, Enterprise, and Quinnebaug. The Despatch is being detached and is now being repaired. The Alliance is on the way home.

THE ASIATIC SQUADRON remains unchanged in the command. The earsarge and Tennessee have reached the United States and have been repaired. The Tennessee will be ready for sea in a few days. The Monongahela has reached San Francisco, has been put out of commission, and now awaits such repairs as she may need. The following ships now compose this squadron, to wit: the Richmond, Ashuelot, Monocacy, Alert, Ranger, and Palos.

THE NORTH ATLANTIC SQUADRON.—After the transfer of Rear-Admiral Howell to the Mediterranean, Rear-Admiral Robert H. Wyman was placed in command of this squadron. The Tennessee will be attached to this squadron, and besides that vessel it will be composed of the Albatross, Vandalia, New Hampshire, Pawnee, Kearsarge, and Nipsic. The monitors also remain attached to it.

THE SOUTH ATLANTIC SQUADRON.—Commodore E. T. Nichols, who had command of this squadron, having been promoted to the rank of rear-admiral, and his cruise having expired, Commodore Andrew A. Benson has been placed in command. The Hartford and Essex have been brought home for repairs and new crews, and the Shenandoah and Massachusetts have taken their places.

THE PACIFIC SQUADRON remains under the same command as last year. It consists of the following vessels: The Pensacola, Lackawanna, Albatross, Tuscarora, Adams, Onward, and the Marion is under orders to join it without delay.

The ships assigned to special service are as follows: The Ticonderoga, Constitution, Minnesota, Michigan, Saratoga, Portsmouth, Rio Bravo, Albatross, Albatross, Alarm, Intrepid, Constellation, and Jamestown. The Star of the West remains in possession of the city of New York, as a training ship in the interest of the merchant marine.

The Minnesota, Constitution, Saratoga, and Portsmouth, are in use as training ships for boys. The Ticonderoga is still engaged in special service on the coasts of Africa and through the Indian Seas, and when last heard from was at Aden, in Arabia, having had that far a most satisfactory and successful cruise. It is confidently expected that material benefits to our commerce will result from this expedition, and that it will become the means of establishing new relations between this country and the continent of Africa and the adjacent islands. The

Michigan remains upon the lakes. The Rio Bravo is continued in the Rio Grande River at Brownsville. The Tallapoosa is yet engaged as a transport vessel. The Constellation has recently sailed for Gibraltar, to transport a new crew for the Trenton, and to return from that ship those whose terms of service have expired to the United States. The Jamestown was sent to Sitka, in Alaska, during the last summer, to furnish protection to persons and property, there being at that time an outbreak threatened by the Indians. It yet remains there, and its officers have done much valuable work in surveying the harbors, erecting wharves, and otherwise examining into and reporting upon the condition of affairs.

The Plymouth has been put in ordinary in consequence of the appearance of the yellow fever which broke out last summer, and will be kept in this condition until it shall be satisfactorily demonstrated that she can be safely sent to sea again.

EXPENDITURES.

The amount of appropriations applicable to the current expenses of the fiscal year ending June 30, 1879, was, as stated in my last annual report, \$14,528,431.70. Subsequently, however, to the estimate of this amount an appropriation was made to cover deficiencies previously existing on account of pay due clerks, clothing undrawn, and military stores in the Marine Corps, which made the entire amount \$14,538,646.17. The net amount drawn from the Treasury by warrant during that period was \$13,343,317.79, as shown by the books of the Department. But the true net expenditure can only be shown by deducting the balances held by disbursing officers at the end of the year for outstanding salaries and bills liquidated and not paid, but which when paid enter into the current expenditures of the present year. This amount on June 30, 1879, was \$283,725.99, as shown by the books of the Fourth Auditor's Office, which, being deducted from the amount drawn out, leaves an aggregate balance unexpended of \$1,479,054.37 which stood to the credit of the Department at the beginning of the present fiscal year. There should, however, be deducted from this balance the sum of \$60,809 appropriated for the Naval Asylum, as that sum was brought to the credit of the asylum on March 24, 1879, by requisition in its favor, and is included in the exhibit of expenditures chargeable to Navy appropriations at that time as refunded and deducted from the amount drawn in that month. The net amount, therefore, which stood to the credit of the Department at the close of the year was \$1,418,245.37—that is, the total net expenditure for the fiscal year ending June 30, 1879, was that much less than the appropriations. Nearly all this unexpended balance stood to the credit of the office of the Secretary of the Navy and of the respective bureaus of the Department, as follows:

Secretary's Office.....	\$37,809 31
Bureau of Navigation.....	47,602 45
Bureau of Ordnance.....	37,564 04

Bureau of Equipment and Recruiting.....	\$183,003 12
Bureau of Yards and Docks.....	62,767 17
Bureau of Medicine and Surgery.....	16,734 52
Bureau of Provisions and Clothing.....	474,955 35
Bureau of Construction and Repair.....	17,513 51
Bureau of Steam Engineering.....	37,078 54
General account of advances.....	219,491 37
Amount in hands of disbursing-officers, as shown above.....	283,725 99

Total 1,418,245 37

In connection with this statement of the amount in the hands of disbursing officers, including those serving both on foreign and home stations, it is proper to say that the accuracy with which these balances are now ascertained is greatly owing to the fidelity of the pay corps of the Navy in making returns of disbursements; and I may, with propriety, add that there is not at the present time a single defalcation amongst all the officers of that corps to the extent of a dollar.

The following table shows the amount of expenditures by warrant and the amount refunded, as well also as that expended from the close of the year to November 1, 1879:

Exhibit of expenditure chargeable to Navy appropriations.

Date.	Drawn.	Refunded.	Expended.
APPROPRIATIONS FOR 1878-1879.			
1878.			
Jan.....	\$1,185,781 89	.....	\$1,185,781 89
Aug.....	1,480,120 70	682,299 11	1,411,821 59
November.....	1,051,405 89	101 87	1,051,304 02
October.....	1,023,236 16	2,590 27	1,020,645 89
November.....	1,550,964 02	26,295 92	1,524,668 10
November.....	1,011,961 14	15,209 79	996,751 35
1879.			
January.....	1,554,148 82	823,290 31	930,858 51
February.....	2,161,249 23	705,147 49	1,456,101 74
March.....	1,786,606 26	934,231 63	852,374 63
April.....	1,971,401 72	1,017,520 11	953,881 61
May.....	2,870,481 16	914,224 67	1,456,256 49
June.....	5,423,534 29	4,920,572 97	502,962 32
	22,570,791 48	9,227,473 69	*13,343,317 79
APPROPRIATIONS FOR 1879-1880.			
1879.			
July.....	1,176,569 41	10,816 89	1,165,752 52
August.....	1,421,309 72	480,319 89	940,989 83
September.....	1,749,804 33	341,676 62	1,507,127 71
October.....	1,422,890 66	362,626 93	1,060,263 73
	5,770,404 12	1,095,440 33	4,674,963 79

This is a statement by warrant and does not include the amount outstanding in the hands of disbursing officers June 30, 1879, which was \$283,725.99.

The total expenditures of the last fiscal year by warrant, after deducting the amount refunded, were \$36,403.70, nominally in excess of those of the previous year. As stated, however, the above table does not show the net amount chargeable to the Department, inasmuch as it does not include the balances in the hands of disbursing officers and not paid before the close of the year. Besides this, also, a portion of the

The amount shown by warrant was expended pursuant to appropriations made for specific objects and not estimated for by the Department. There were to cover deficiencies for previous years 1875, '76, and '77, which had been omitted, for materials furnished the Jeannette in fitting out that vessel for her expedition to the North Polar Sea, and for other expenses not pertaining to the current operations of the Department. The total of these specific appropriations was \$212,392.30, which, deducted from the aggregate shown in the table, makes the aggregate expenditures as shown by warrant, for the fiscal year ending June 30, 1879, \$175,988.60 less than those for the previous year, and the actual amount, including that in the hands of disbursing officers, \$459,714.58 less than the expenditures of that year.

The appropriations available for the present fiscal year, commencing July 1, 1879, are \$14,502,250.67. The amount drawn by warrant from the treasury from July 1 to November 1, 1879, deducting that refunded, was \$4,674,963.79. The amount drawn by warrant during the same period of the present year was \$4,669,563.39. This difference is more than accounted for by the fact that the disbursing officers hold in hand an excess of expenditures over the previous year.

ESTIMATES.

The following table will show the estimates for the fiscal year ending June 30, 1881:

ESTIMATES.

Department of the Navy	\$7,546,725 00
Department of civil establishment in navy-yards	196,199 50
Armory and torpedo corps	270,000 00
Armament, and equipment	800,000 00
Navigation and navigation supplies	104,500 00
Geographic work	46,000 00
Observatory, Nautical Almanac	44,800 00
Construction and preservation of vessels	1,500,000 00
Machinery, tools, &c.	800,000 00
Commissions for the Navy	1,282,125 00
Construction of hospitals and laboratories	30,000 00
Medical Department	45,000 00
Naval hospital fund	50,000 00
Urgent expenses of department and bureaus	236,000 00
Naval Academy	187,344 40
Department of Marine Corps	851,145 00
Asylum, Philadelphia	59,309 00
Maintenance of yards and docks	440,000 00
Repairs, &c., of navy-yards	375,000 00
	<hr/>
	14,864,147 90

This amount is \$361,897.28 in excess of the appropriations for the present year. In order, however, to ascertain the total difference between this estimate and the current estimates for the present year, the amount of specific appropriations not estimated for by the Department

r the next year but appropriated for the current fiscal year, should be added. These amount to \$208,281.72, which, added as above, will make \$570,179 as the total excess of the estimates for the next over the aggregate appropriations for the present year. This is made up as follows:

Pay of the Navy	\$303,450 00
Equipment and recruiting contingent	5,000 00
Provisions, Navy	257,125 00
Provisions and clothing, civil establishment	1,017 25
Civil establishment, yards and docks	4,900 00
Naval Academy	850 00
Quartermaster of Marine Corps	239 00
Steam machinery, civil establishment	282 75
	<hr/>
	572,864 00
Deficit excess of appropriation for pay of Marine Corps over and above the amount estimated for	2,685 00
	<hr/>
Total	570,179 00

Although the total excess thus shown is \$570,179, yet the actual amount, considered with reference to current ordinary expenditures is, as stated above, only \$361,897.28, which is thus accounted for:

The estimate for pay of the Navy made in my last annual report was \$7,350,000. This was ascertained by accurate calculation, taking the number of officers of all grades in the Navy and their pay as fixed by law, and the result was reached by the simple rule of addition. But Congress deemed it best to reduce the amount appropriated to \$7,243,275, or \$106,725 less than the estimate. This does not create a deficiency, inasmuch as pay of the Navy is necessarily a continuing appropriation; for the reason that it is the custom of paymasters of ships abroad to draw sixty and ninety day bills upon London, which cannot be regarded as disbursements until they are paid, and when they are drawn during the months of May and June cannot be taken into account until after the close of the fiscal year. The result is that it is impossible to strike a precise balance at the end of the year, of this particular fund, but the expenditure runs necessarily into the year in which the bills are paid. Consequently when the appropriation is short, it creates only a necessity for such an appropriation for any one year as will cover the shortage of the previous year. For example, if Congress had not cut down the estimate of the Department, the fund for the pay of the Navy would not have been short at the close of the last year; that is, there would have been money enough in the Treasury to have paid within the first quarter of the present year all the bills drawn during the sixty days preceding the close of the last year. But as the appropriation is a continuing one, the difficulty on this score will be overcome by adding the sum of \$106,725 to the appropriations of the present year, and the same amount to those of the next year, so as to prevent a like result then. These sums added make \$213,450. The remaining \$90,000 is the estimated amount made necessary for the next year by the system for training boys, that sum be-

REPORT OF THE SECRETARY OF THE NAVY.

ty with the act of Congress to abolish the volunteer navy. The amount of \$239 estimated for the quartermaster of the Marine Corps is up of sundry items running through his estimates for the year ending July 1, 1881, and is believed to be necessary to the service. Several items thus explained aggregate \$572,864, but in order to obtain the aggregate of the excess, as explained above, there should be deducted \$2,685, which was the excess of the appropriations over the estimates for the present year. This leaves \$570,179 as the total excess of the appropriations of the current year, which this detailed statement is designed to explain.

NAVY PENSION FUND.

The following statement shows the number and yearly amount of pensions on the rolls June 30, 1879, and the amount paid during the year:

	On roll June 30, 1879.	Yearly value.	Amount paid for pensions.
Invalids	1,844	\$211,515 18	\$209,003 03
Widows and others	1,772	312,675 20	324,222 63
Total	3,616	524,290 48	533,226 66

"PAY OF THE NAVY" AND "SMALL STORES."

On my recommendation to the last Congress provision was made for the separation of "small stores" from "pay of the Navy," by the act of February 14, 1879, which established it as a separate fund. By the operation of this law the "small stores fund" was set aside as a distinct fund, and thus a perpetual inroad upon "pay of the Navy" was cut off. Deficits in pay were expressed in losses upon issues of stores, as indicated in my last annual report, as well as in the sales of condemned stores, which never bring the original cost, and also in losses outright from casualties of shipwrecks. These unavoidable losses gradually depleted the small stores fund; and in future they will be expressed in deficits, as has never been the case before. The needs of the fund may now be shown from year to year, and Congress can take into consideration any demonstrated deficiency, where one exists, and make provision for the same understandingly by appropriation, as has been done from time to time for clothing for the Navy.

There is another source of deficiency in the appropriation for pay of the Navy, which has remained undiscovered and has made yearly drafts for a number of years upon the money provided solely for the pay of sailors and enlisted men. I refer to the loss on exchange and the expense of transportation of money to particular points for disbursement and transfer between paymasters. It is a very plain proposition that, if an amount is appropriated just equal to the annual requirements

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NAVAL ACADEMY.

the death of Commodore Foxhall A. Parker, since the date of my last report, created a vacancy in the office of Superintendent of the Naval Academy. It occurred during the progress of the annual examination in June, and I was enabled, being present, to realize how admirable he had managed the institution. The affectionate regard shown him by the cadets evidenced how completely he had won their esteem by firm yet gentle and kind management, and the universal sentiment of those with whom he had been officially associated evidenced merely his peculiar fitness for the position, but the faithful and judicious manner in which he discharged his official duties. His successor, Rear-Admiral George B. Balch, has always borne so high a character in the Navy, and possesses such eminent qualities as a man, as to inspire the Department that he will be equally successful, and I take great pleasure in saying that, thus far, he has met my expectations. Under his superintendency the present term is progressing under the most favorable auspices.

The prosperous and satisfactory condition of the institution is fully set forth in the accompanying report of the Board of Visitors. The gentlemen who composed that board were patient and thorough in their investigations, and the conclusions reached by them were not only commendatory of the general management by the former Superintendent, and the officers and professors who compose the Academic Board, but of the conduct and deportment of the cadets. Recognizing the fact that in such an institution, where the number of cadets is so large and their temperaments and inclinations necessarily varied and conflicting, sternly harsh and severe rules are required to preserve discipline, they, nevertheless, say "that, as a general thing, the cadets observe the rules and regulations of the institution with the same alacrity and promptness as they would have those to do in after life who may be placed under them in their respective commands."

The training in seamanship, navigation, and gunnery is as satisfactory and complete as possible with the facilities at command. In the opinion of the board, however, the vessels now used are not sufficient for enough practice in gunnery, and they therefore recommend that a gun-vessel of 500 or 700 tons be provided for that purpose. The Department would find much difficulty in carrying out this recommendation by the use of any vessel in commission or undergoing repair, in consequence of the necessity of employing them in other and different service, and consequently submits the recommendation of the Board of Visitors to the consideration of Congress. If no congressional direction shall be given upon the subject, it will avail itself of all the means at its command to carry out this recommendation with as little delay as possible.

The cost of this method of practice would not be increased beyond present expenditure, while it would undoubtedly tend to produce

this practical difficulty: that as the professors of steam-engineering are not educated as naval constructors, it imposes upon them the decision of matters not properly pertaining to their profession, and might place the cadet-engineer in the position of having to acquire a profession different from the one in which he had graduated. He might or might not make a good constructor, for it does not necessarily follow that the most ingenious builder of machinery is, in all respects, qualified to become a competent constructor of vessels of war. In all the European governments the two professions are recognized as entirely distinct, and in England naval constructors are specially educated in certain professional branches pertaining to the structure of ships, while those branches in which steam-engineers are especially educated are of a character wholly different. This policy is deemed preferable, as more consistent with the best interests of the service, and therefore I repeat the recommendation heretofore made by me, that Congress shall authorize the admission of a sufficient number of cadet constructors annually, as it has already done of cadet-engineers, so that after graduation they may have entire charge of that branch of the service. There is as much necessity for the one as the other. Chief constructors, at present, are taken from assistant constructors by promotion, while the department is left to select the latter from such ship-carpenters and others as may be recommended to it, and who may be supposed to have sufficient genius and talents to make chief constructors. Good and fortunate selections cannot be always assured so long as this practice prevails; and it is not desirable that it should remain a part of the permanent establishment of the Navy. The law confides to the Secretary discretionary power to make assistant constructors out of cadet-engineers, but I have declined to exercise this discretion, mainly for the above reasons. Two of these cadet engineers, however, have, with my approbation, recently entered the Royal College at Woolwich, in England, where they are pursuing a course of study as constructors, with such facilities as are furnished in the government dock-yards. The authorities of Great Britain admitted them, with great liberality, without the accustomed examination, and kindly accepted their graduating certificates obtained at the Naval Academy as sufficient evidence of their qualifications. They are young men of fine promise; and it is confidently expected they will return, after finishing their course, qualified to take any position connected with the construction of vessels. In the mean time, it is very desirable that Congress shall authorize such steps to be taken as shall recognize the necessity of having a corps of educated constructors graduated at the Academy, in order to provide for the future wants of the Navy.

Authority is given by existing laws for the education of midshipmen and others as naval constructors or steam-engineers, provided they show a peculiar aptitude therefor. This is left discretionary with the Secretary. By the same law he is allowed to form a separate class of cadet-

neers, and otherwise afford them all proper facilities for such a scientific mechanical education as will fit them for steam-engineers and constructors. In the further provisions of the law, however, a practical distinction is made between steam-engineers and constructors in this respect. The Secretary is authorized to appoint cadet-engineers to the number of twenty-five each year, but is not authorized to appoint cadet-constructors. This distinction is practically embarrassing. In the first place, when cadet-midshipmen are appointed from Congressional districts as they enter the service with the hope and expectation of becoming officers of the line, all the grades and titles of which are open before them. And thus entering, there is no authority given to compel them, at the mere discretion of the Secretary, to change the whole course of their professional lives by making naval constructors out of them, and thereby take them away from the line and attach them to the staff. Nor would it be advisable to confer such authority upon the Secretary, because in many instances it might occur that cadet-midshipmen would alter the course upon which they had entered, while the interest of the service, as viewed by the Secretary, might require them to adopt another; and to force them against their will to make this change would not only be violative of the spirit, if not the letter, of the law which authorizes their appointment, but manifestly unjust to them. In the second place, cadet-engineers are appointed as such, and not as cadet-constructors; and they are required, like cadet-midshipmen, to serve two years' service on naval steamers. Consequently, to divert them from the studies peculiar to this profession and turn them into another and different profession would be, in many cases, as unjust to them as to the cadet-midshipmen.

But the proper remedy may be furnished and the whole difficulty may be overcome if Congress will authorize the annual appointment of such number of cadet-constructors as may be deemed necessary to be educated as such. This will be simply to place cadet-engineers and cadet-constructors upon the same footing. Then each class will pursue the course of study adapted to its profession, and we may reasonably expect to realize within a few years the benefits of having well and thoroughly educated constructors as well as engineers in distinct professions. We should then look to the former as other nations do—to lay down the line and regulate the tonnage, displacement, and sailing qualities of our ships of war, and to the latter to furnish them with such engines, boilers, and machinery as will give them additional speed and secure perfect safety to them at sea.

I respectfully call the attention of Congress to the recommendations of the Board of Visitors in reference to the erection of new buildings and other improvements which they consider absolutely necessary. These are, a wing to the rear of the new building erected for cadet headquarters, a separate building for laundries, a new armory in place of the old shed now occupied for that purpose, and a new building for the

marine barracks. These improvements are not estimated for, but they are deemed of great importance to the institution, and I unite with the board in recommending them to the favorable consideration of Congress. Approximate estimates of their cost can be readily obtained.

NAVY-YARDS.

The work done during the year at the several navy-yards will appear in detail, in the accompanying report of the Bureau of Yards and Docks. It has been regulated by the condition of the yards and the amount of the appropriations for that purpose. Although larger amounts of money might in all probability have been judiciously expended upon several of the yards, yet it has been the object of the Department to apply the amount at its disposal in the direction indicated in the estimates upon which the appropriations were based and with reference to immediate wants. The report of the bureau will show the nature of the work done at each yard, consisting of yard improvements, repairs and preservation, general maintenance, civil establishment, and contingent expenses. It was not deemed advisable to begin any new works or to make extensive repairs, for the reason that no special appropriations were made for that purpose. To have done so without such appropriations, indicating their approval, might have subjected the government to the possible loss of the money so expended, in the event of subsequent appropriations being withheld. Although the Department may possess the discretionary power to apply the general appropriations in this way, it is considered by me to be a safer and better course to await the more direct appropriation of Congress.

KITTERY YARD.—The dry dock was found in such condition as to require thorough repair. Being one of the most valuable belonging to the government and at one of the most important yards, this was done, but the work was so conducted as not to interfere with its use when needed. The total expenditure was \$67,011.23.

CHARLESTOWN YARD.—A special appropriation for repairing the rope-walk has been expended, and it has, in consequence, become one of the most valuable establishments of the kind in this country, if not in the world. It possesses the capacity to supply all the rope needed by the Navy, and of the best quality. Several small wooden buildings which were exposed to fires have been removed, but there are others in like condition which should be removed hereafter, as, in the event of fire, they would endanger the more valuable buildings. The great importance of this yard renders it necessary that it should be always kept in good condition. The caisson of the dry-dock is in a partially decayed condition, and in danger of becoming entirely unfit for use if not repaired. The caisson has been in use for nearly fifty years, and it would be bad economy to leave it to further decay. The total expenditure has been \$106,333.62.

NEW LONDON YARD.—The limited appropriations heretofore made have rendered it impossible to put this yard in a condition for general use. Having only a wharf and storehouse, and with only a single building suitable for residence, it cannot be used for either construction or repair. The harbor is very fine and admirably protected, and in reference to both it and the yard I can only invite attention to what was contained in my last annual report. The expenditures have been limited to actual necessity, and have been confined to a few repairs. The total amount was \$7,442.38.

BROOKLYN YARD.—What I have heretofore said of this yard may be repeated with great propriety. It remains in admirable condition. The annual expenditures are made with the view of preventing its deterioration and continuing its general improvement. The money expended there has been applied with both economy and propriety. The total expenditure was \$125,816.19.

LEAGUE ISLAND YARD.—This yard was greatly damaged by a severe storm during the year. About 1,400 feet of the dike was washed away and nearly the entire island was submerged to the depth of from 3 to 7 feet. Considerable material was swept away. This had, necessarily, to be repaired out of the general fund, as there was no other applicable to that purpose. With all the means at the disposal of the Department, it has only been able to make repairs of a temporary character. The yard will be left subject to great future injury unless they are made permanent. The total expenditure was \$121,840.26.

WASHINGTON YARD.—The value and importance of this yard has, in no sense, diminished. Its manufacturing facilities have steadily increased. The rolling-mill, erected a little over a year ago, has proved a complete success, and has already saved to the government more than its cost. The public interest requires that its boundaries should be somewhat enlarged, and I approve the recommendation of the Bureau of Yards and Docks in reference thereto. The yard has been kept in excellent condition, and the expenditures have been made most judiciously and with commendable economy.

The necessity for improving the East branch of the Potomac river has become absolute. If it is not done access to this yard may, in a short time, become impossible, except with vessels of very light draught. The mud and sand washed in from the adjacent high-grounds is rapidly filling up the channel, so that vessels are now frequently grounded in attempting to reach the yard. Appropriations heretofore made have contemplated the improvement of the Potomac from Georgetown to Alexandria, and have had no reference to the East branch. The longer they are delayed the greater will become the difficulty of opening the channel, and good economy would seem to require that it should be done immediately. The total expenditure was \$90,184.42.

NORFOLK YARD.—The buildings, wharves, and roadways at this yard suffered great injury in August last in consequence of a violent storm.

the repair of these required an extra expenditure, and, so far as it has progressed, the money has been judiciously expended. In a short time it is believed that the yard will be again put in good condition. This is a most important and valuable yard. The harbor is one of the best upon the Atlantic coast, and the climate is such that work can be done during the whole year. Without the re-erection of timber-sheds, the valuable timber now on hand will be subject to great decrease in value from exposure to the weather. The total expenditure was \$108,648.71.

PENSACOLA YARD.—I desire to call attention to what was said in reference to this yard in my last annual report. As it stands alone upon the Gulf, and has such large quantities of live-oak timber adjacent to it, there is every reason why it should be no longer neglected. During the year nothing was done except what was necessary to its preservation. The section-dock heretofore authorized by Congress, and built at Chester, Pa., has been so far advanced that two sections of it were transported to the yard during the last summer. They escaped all the perils of the sea, and are now ready to be put in use, as originally contemplated, when the remaining sections are finished. The total expenditure was \$52,731.07.

MARE ISLAND YARD.—The special appropriation of \$75,000 for the dry-dock has been expended, and the work has progressed most satisfactorily. The entrance to it is now protected by a coffer-dam, which is able at all times to give way, and the work should be pressed forward as rapidly as possible to a point where better protection shall be secured. The great importance of this yard commends it to the special consideration of Congress. It being the only one upon our Pacific coast, it is the exclusive representative of the Department in repairing vessels attached to the Asiatic and Pacific squadrons. Consequently it should be put and kept in thorough condition. Up to the present time as much has been done in that direction as could possibly be done with the money allowed. The total expenditure has been \$185,712.98.

SACKET'S HARBOR.—At this station the government owns a ship-house, in which there is the frame of a line-of-battle ship, which has been lying there a great many years, and is rapidly decaying. Although a portion of the building has been injured by a gale of wind, yet it has not been advisable to repair it, inasmuch as neither it nor the frame of the ship is considered by the Department as having any actual value. It is hoped that Congress will direct the disposition of this property. The sum expended in taking care of it was \$916.72.

KEY WEST.—Nothing more could be done at this station than to make some slight repairs to the buildings and shops and to renew the wharf. This place is frequently visited by our vessels, and the interest of the service requires that it should be ready at all times to furnish them with necessary assistance. The total expenditure was \$6,999.31.

NAVAL ASYLUM.—At the close of the last fiscal year there were 167 beneficiaries at this institution. Their condition is rendered as comfortable as possible at a total expense of \$50,259.32.

THE TRAINING SYSTEM.

the importance of the system which authorizes the training of boys seamen cannot be over-estimated. Thus far it promises complete success, and if persevered in will undoubtedly supply the Navy with a body of men to whom our ships may be safely intrusted while at sea, upon whose courage and patriotism the country may confidently rely in time of war. No nation can safely intrust the keeping of its ships to those who do not feel that they owe undivided allegiance to it, as the Navy has borne so conspicuous a part heretofore, and will undoubtedly bear an equally conspicuous part hereafter, in every measure required to preserve our national honor, all the means necessary to make it thoroughly American should be encouraged. The British navy has the reputation of being unsurpassed in its *personnel*, and as it has acquired this distinction mainly by means of its training system, we may be reasonably assured that by a proper development of our own we may obtain a like result.

At the time of the passage of the act of May 12, 1879, there were 945 boys enlisted and serving as apprentices. These were enlisted under a previous general law, which made it discretionary with the Department, but greatly restricted the exercise of this authority by considering the apprentices as part of the 7,500 seamen authorized for the service. The present act, however, authorizes the enlistment of 750 boys in addition to the previous force, which increases the whole number of seamen to 10,000.

Soon after the passage of this act measures were taken to extend facilities for these enlistments into the interior of the country, as far west as the States bordering on the Mississippi river, and as far southwest as the States bordering upon the lakes, while, at the same time, recruiting was continued in the seaboard States. The result has been more favorable than was anticipated, and 420 boys have been enlisted since the passage of the law, who for sprightliness, vigor, and robust constitutions are unsurpassed by any other like number of the same age in the country. These added to those previously in the service make the total number 1,365, nearly one-seventh of the whole body of men. Of this number, however, 625 of former enlistments have been detailed for sea-service on board of several of our cruisers, and the Department has great satisfaction in being able to say that, in every instance where they have been detailed for that purpose, their conduct has been universally good as to elicit the warmest praise from all the officers in command of them. Several officers have specially commended them. Recent personal intercourse with the greater part of these boys has convinced me that they, with very few exceptions, are ambitious to distinguish themselves in the service. Many of them possess a high degree of intelligence, and the education of all in an elementary course of learning is carefully looked after. As they mainly represent the industrial

REPORT OF THE SECRETARY OF THE NAVY.

, and promise to be of much value to the naval service, it is worthy consideration whether it is not desirable to adopt some line of policy which shall excite a proper spirit of emulation in their

This may be done by authorizing medals of honor to be conferred upon those who shall show themselves to be most meritorious. Something like this would tend very greatly towards elevating the moral standard of the service, and stimulate them to put forth their best energies. Complaints have reached the Department from some of these boys and parents of the unsuitable character of the Navy ration as food. It is natural that these complaints should be made, for it is scarcely expected that boys between the ages of fifteen and eighteen, who have been accustomed to home comforts and diet, will be immediately adjusted to food prepared for older and hardier seamen. But the Department has no discretion on this subject, as the constituent parts of the navy ration are regulated by law, and no substitution is allowed except in the cases of senior officers in command, and the mere exchange of coffee for fee and sugar for the extract of coffee combined with milk and

It is recommended that discretionary power be given to change the rations for boys so as to make them more suitable to their ages and condition.

A good reason is perceived why these apprentice boys should not be required to buy their clothing without charge. At present the price has to be deducted from their pay, while all the soldiers in the Army are supplied with clothing without cost to themselves. The expense is trifling compared with the injustice of such discrimination, and I respectfully recommend that this inequality shall be removed. Strict justice requires that all men, in this respect, shall be placed upon the same footing with the soldiers; but, at all events, that the apprentice boys should be exempt from this charge, which the most, if not all, of them are ill able to bear.

SANITARY REGULATIONS.

Not only with reference to naval vessels, but to those belonging to the mercantile marine, has it always been considered of the highest importance that proper precautions should be taken to secure healthfulness to their crews. As they visit the various ports of the world, they may, if in an unhealthy condition, carry along with them the worst forms of contagious diseases, and thus scatter pestilence and death, in the most infectious forms, throughout districts otherwise exempt from them. There is no convincing evidence that the yellow fever has been produced in the United States by any local causes in those cities and sections where it has hitherto prevailed. The facts furnished by the experience of former years, when it existed only in seaport cities, would seem to confirm the conclusion that it must have been imported by vessels from abroad, bringing it from those tropical regions where it had been generated among populations exposed to the influences of a warm climate.

and where sanitary precautions were unknown. Whether the recurrence of this disease in the interior of the country has furnished any facts in disproof of this theory, scientific research can alone determine. And as science, in the solution of this important problem, is the representative of the whole country as well as of humanity, whatsoever done in that direction is of national importance. If the assumption that the disease is not indigenous shall be found to be true, then our attention must be turned in the direction of endeavoring to adopt such sanitary and precautionary measures as shall prevent its introduction in the future. And if, on the other hand, it shall be ascertained that the germ has been deposited and left in a torpid state during the winter and has developed into activity during the summer months, then it will become still more important that some method for its destruction shall be discovered.

Little success has been attained, up to the present time, in demonstrating that epidemic diseases have a germ origin. Recent scientific research at Rome has given rise to the belief that the malarial poison of the Pontine marshes exists in minute animalculæ, which float about imperceptibly in the air and water, and are susceptible, under proper conditions, of infinite distribution. The investigations leading to this discovery were conducted with the utmost care and precision, and whether the conclusions reached shall be finally adopted or not by the scientific world, they have opened a field for further experimental research. And, in the end, it shall be ascertained that the yellow-fever germ actually exists, a way may then be opened for the introduction of efficient means of preventing the disease altogether, or at least of restricting its dissemination.

When this disease made its appearance on board the United States steamer *Plymouth*, in the summer of 1877, it was not attended with such fatality as to create any unusual degree of alarm. The skillful attention of the naval medical officers was sufficient to assure control over the disease, and the number of deaths was comparatively few. The ship, however, was subjected to thorough fumigation in the most approved modes, besides being exposed to the lowest degree of cold that could be reached in an exposed condition in latitude 44° north. But the utmost care was not sufficient to prevent the disease from making its appearance again in the summer of 1878, when the ship was returned to a tropical climate. In the case of the United States steamer *Susquehanna*, some years before, the experience was substantially the same. Consequently the *Plymouth*, like the *Susquehanna*, was put out of commission, stripped of all her equipment, and yet remains in a proper condition for such further experiments as may become necessary. It is hoped that, as the disease did not reappear on the *Susquehanna* after the second winter, a like result may be produced with the *Plymouth*; but, in the mean time, the Department continues to employ, through its medical officers, all possible diligence in inves-

ing the causes of the disease, the various and most approved methods preventing its introduction, and the best means of purifying the atmosphere of ships by ventilation. With the means now at its disposal, these investigations must necessarily be more limited than is desirable, but they will be carried as far as possible. And if it shall be the pleasure of Congress to adopt the suggestion contained in the accompanying report of the Bureau of Medicine and Surgery, and authorize the establishment of a station on our coast where infected vessels may be sent and experiments made to discover the best and surest methods of disinfection, the results reasonably to be expected would without doubt be more satisfactory. These are important and valuable suggestions; and although the amount necessary to put them in practice has not been estimated for by me, inasmuch as it does not constitute a necessary part of the current expenditure, yet, in my opinion, the amount of money could not otherwise be better, if so well, expended. I therefore recommend the adoption of the proposed plan, and do so there readily because the trained experience and abilities of the medical officers of the Navy, the knowledge acquired by them in witnessing the effects produced by climatic influences, and their familiarity with the various conditions of the atmosphere in the several parts of ships, peculiarly fit them for this important work. *

When an epidemic is prevailing very little time is afforded to the medical attendants for scientific investigation into the causes which produced it. Those to whom this work should be confided ought not only to be specially fitted for it by scientific training, but be freed from the care and responsibility of the sick, while at the same time they should have access to sick-rooms in order to make atmospheric observations, with a view of ascertaining whether any organic germs existed and mark the effects of fumigation.

The Department assigned medical officers of the Navy to duty at Memphris and the West Indies, who acted under the general direction of the National Board of Health. They rendered important services and gained valuable knowledge. It is desirable to utilize this experience and to prepare a greater number of these officers for the investigations above mentioned; and no better school for this purpose could be established than the station recommended by the bureau, at some point upon the coast where our ships of war could immediately resort for disinfection in case of epidemics of yellow fever breaking out. The ships could be made ready for sea again with but little delay, and in time of war the advantages of such a resort would be incalculable.

As the means at the disposal of the Department have necessarily limited the experiments thus far, investigations have been confined mainly to observations on shipboard, at shore stations, and in foreign ports, with a view to decide the relative merits of the various modes of artificial ventilation. It is necessary to health that the air should be kept in motion in all parts of a ship, whether stationary or afloat, and

erous contrivances for this purpose have been invented. Some of answer the purpose reasonably well when a ship is moving, while produce no perceptible effect while she lies at anchor, when foul air ly accumulates. Desirous of ascertaining the best of these methods, Department, during the last year, while the United States steamer monnd was undergoing repair, introduced a plan on board that l, which, after investigation, seemed to promise the most favorable ts. Complete ventilation has been obtained by it, and it is believed the Richmond is now the best ventilated ship of war in our Navy, t in the world. During her recent voyage from New York to ghai, the temperature of her berth-deck varied from 67° to 80° enheit, and of her spar-deck from 48° to 84°, so that the temperature e air on both decks is about the same. Besides this method of lation, however, large quadrangular air-ponts have been introduced ace of the small round ones so common in our ships, and these have ibuted greatly to the admission of fresh air. The two causes com- l have produced the most gratifying results and have materially ished the sick-list. Although it would seem that the value of such tilator as that now upon the Richmond could scarcely be esti- d, yet it is considered too costly to be introduced upon all our ships rgoing repairs without increased appropriations for that purpose. stigations will be continued, however, with the view of ascertaining her it cannot be more economically constructed, and it is hoped among the great variety of plans some suitable one may be found, at it may be introduced into general use, not alone in the Navy, lso among merchant vessels, where ventilation is so much needed event injury to their cargoes.

THE RULES OF THE SEA.

e law as it now stands prescribes a set of rules for the navigation ssels, which are designed to prevent collisions at sea and on inland rs. It is believed that they embody, in their general features, what come to be known as the laws of the sea, and furnish, in the main, nable security against collisions. But in their administration some ical difficulties have arisen which deserve Congressional attention. e ocean highway being free and all vessels being equally liable to ccident of collision, the most perfect understanding and unanimity cessary in formulating rules for the guidance of vessels meeting and ng upon the sea or navigable rivers and bays. It is desirable that unanimity should be international, certainly in so far as the naviga- of the sea is concerned, that is, that it should be attained by simi- laws enacted by all the maritime nations. General laws of this re would serve as the basis for subordinate and separate national lation. But inasmuch as no such unanimity has been secured by national arrangements between the United States and other gov-

ments, it is, in every sense, important that we should secure it in our own country.

The mariners of all nations are separated into two completely independent divisions—the navy and the merchant marines. In every nation these two divisions are subjected to entirely independent control, so far as the exclusive interest of each service is concerned. But in all other nations, except the United States, both the naval and mercantile marine are affected by some mutual system of rules, governing both divisions. Here no mutual action has been secured, and if ever attempted it was a failure. Some means of making it a success should be adopted, and the subject is important enough to invoke the careful attention of Congress.

The Secretary of the Navy is empowered by law to make rules for the guidance of naval vessels, but is not bound to consider the necessities or conveniences of the merchant marine, or to communicate these rules to merchant captains. The Board of Supervising Inspectors are empowered to make rules for the guidance of merchant vessels, but naval vessels are exempt from following them, and are not required to be notified of them. Foreign vessels are, by statute, exempted from both the naval and merchant rules, and follow only those of their own nations. Coast-Survey and light-house vessels are under the control of the Treasury Department, but are officered by naval officers, and have special rules for their special guidance except such as they elect to follow. Such an anomalous condition of things ought not to exist, and frequent collisions at sea may be expected while it does exist.

The rules issued some years ago by the Navy Department were exclusively designed for the guidance of naval vessels, and were prescribed without any reference to the special needs of the merchant service. The statute of 1877, with regard to the rules of the sea, was prepared without reference to the special necessities of the Navy, and naval officers have been left to discover, as opportunity offered, the differences between the new and the former laws upon which the naval rules were based. As the inevitable result of this want of unanimity, both the rules governing the Navy and those governing the merchant marine are, in some respects, faulty, and their instructions in several points are supposed to be in direct conflict.

It is understood that new rules have been submitted by the English Government to the United States, which may invite legislation. They have not been submitted for the examination of the Navy Department, and if they have been to the Board of Supervising Inspectors, no notice thereof has reached the Department. The presentation of them, however, makes the occasion a proper one for an effort to secure international unanimity if possible, and if not, for securing harmony in our own system. It is undoubtedly true that some method of joint action between the controlling authorities of the naval and merchant service is absolutely necessary wherever the interests of both kinds of service become

tical. This object would, in all probability, be accomplished by the organization of a board representing the Navy, the Board of Supervisors, the Inspectors, and the revenue service, to whom should be intrusted the decision of all questions in which the whole marine service is alike interested. The suggestion of this method is only made with a view to inquiry and whatsoever legislation Congress shall deem expedient.

OBSERVATORY.

The accompanying report of the Superintendent of the Naval Observatory will show that it has not lost any of its claims to the public favor. Its services to the cause of science are of incalculable value, and, as it has already reached the front rank among the kindred institutions of the world, the question whether or not it shall receive additional favor and protection from the government does not seem to be debatable. I desire to call special attention to that part of the report of the Superintendent which has relation to the malarious influences to which the present site of the observatory is subject, and to add my own to his commendation for the purchase of a new site. It is very desirable that this should be done without delay, not only on account of health, but because economy requires that the purchase should be made before there shall be a large increase in the value of real estate, which seems probable in the near future. There are 1,075,865 cubic yards of earth on the grounds upon which the buildings stand, which can be removed in order to make the lots correspond with the grades of the city streets and to a proper grade to the river front. The removal of so large a quantity of earth will contribute materially to filling up a large number of lots in the adjacent river flats.

MISCELLANEOUS.

No new ships have been commenced since those authorized by the act of March 3, 1873, but some of those previously built have undergone so extensive repairs as to make them comparatively new in appearance except their frames, and in the cases of the Quinnebaug, Nipsi, Galena, they may be considered as entirely new. Where the frames are of live-oak they have shown very little sign of decay, even after twenty-five or thirty years of service. Consequently, in the construction of ships of war we are, in some degree, behind the European maritime powers, although some of our vessels, as the Trenton, Marion, Vandali, Atara, Quinnebaug, Galena, Essex, Enterprise, Adams, Alliance, and others, are such fast sailers and good sea boats as to compare favorably with the best foreign vessels of war of their classes. The largest part of our Navy, however, is composed of vessels of the old types, and while some of them possess excellent qualities, and are equal to any in the world of the same types, yet the Navy, as a whole, cannot be brought up to the modern standard of naval architecture until we shall

all ourselves of existing improvements. We do not need so large a navy as the great maritime powers of Europe. They are crowded so closely together, and are so perpetually engaged in contests for supremacy, that strong navies are as essential to them as immense armies. Hence they expend large sums of money in experiments, in order to add to the efficiency of their vessels of war, not only as regards their speed but their qualities of attack and defense. While, therefore, we have adhered to the old types of vessels, they have introduced new ones, proposed to combine these qualities in a greater degree than has hitherto been reached. But whether in these respects they have surpassed us, and if so to what degree, remains an open question.

We cannot dispense with a navy, whether it be regarded with reference to defense or in its relations to our commerce. None of the nations is in a condition to do without strong armaments at sea, any more than to do away with preparations for defense on land. Our position does not exempt us from the necessities common to them all, but rather demands of us, in view of our rapid growth and increasing importance, that we should promptly recognize and act with reference to them. The best of the vessels of war of the European powers are, like our own, of the old types, and not superior to those of our Navy. Those only of recent construction are of improved types, and of these we can avail ourselves in the future improvement of the Navy, as they have heretofore done of improvements made by us. With the view of ultimately securing a combination of these advantages with such others as we possess ourselves, I directed the Bureau of Construction and Repair, more than a year ago, to direct the attention of our naval constructors to the necessity of laying down the lines and preparing plans for new ships of war, with reference to the best modern improvements. Some of these have been already furnished to the Department, and others are in such an advanced condition that they can be made ready whenever Congress may deem it advisable to authorize new vessels to be built. In the mean time, the preparation of these plans furnishes a favorable opportunity to our naval constructors to improve themselves in the science of their profession. It excites a generous and commendable emulation amongst them, which cannot fail to result in benefit to the government, in securing such types of vessels, when new ones shall be built, as shall compare favorably with those of any of the modern nations. It is not believed that any people in the world possess a higher degree of mechanical genius than ours.

Apart from the question of the plan and type of ships of war is that of the material out of which they shall be built, whether of wood, iron, or steel. For unarmored ships wood is unquestionably superior to iron or steel. A heavy shot striking near the water-line of an iron ship and passing through both sides would cause such damage, particularly in the bow where passing out, that it would be impossible to stop the water, and would probably result in sinking the ship. A wooden ship perfo-

and in the same manner could be far more readily kept afloat, the advantages of water-tight compartments being the same in both vessels. A great cause of complaint and dissatisfaction with wooden ships arises from their early decay, resulting from a law of nature never yet fully overcome. Many unsuccessful efforts have been made to do so, but thus far practical tests have not demonstrated the thorough efficacy of any of them. I have caused a process of preservation to be applied to a quantity of timber at the Boston navy-yard, which promises satisfactory results, at least to the extent of greatly increasing its durability. It will, however, require a period of time sufficiently long to compare it with timber in its natural state, in order to ascertain its value. If by this or any other method it shall be satisfactorily shown that the natural decay of white-oak and yellow-pine timber can be arrested so as to give them something like the durability of live-oak, it does not seem probable that wooden ships of war will be abandoned for those of either iron or steel. And if they shall not be, then the immense growth of timber in our country will be useful in the future, as it has been in the past, in the construction of our unarmored ships of war.

Although immense sums of money have been spent by European powers in the construction of heavily armed and armored iron ships of war, it has by no means been proved that the plans of these ships are superior to the plans of our monitors. The armament and armor are undoubtedly superior, and the contest for supremacy between ordnance and armor is still going on. There is no reason now apparent for supposing that our type of iron-clads, when armed and armored in accordance with the ideas now prevailing, will be inferior to those of foreign powers. On the contrary, there is much reason for believing they will prove to be superior.

There have been no extensive purchases of timber during the past year. Only that required for special purposes has been obtained. There is on hand at the several yards, January 1, 1878, of live-oak 1,664,988 cubic feet, and of white oak and yellow pine 1,569,112 cubic feet. If all this timber shall prove to be of as good quality as was called for by the contracts under which it was purchased, it would be sufficient to build a number of ships of the Alaska class; and, consequently, with this large stock on hand, it will not be necessary to make any further immediate purchases, except for special purposes, unless Congress shall authorize new ships to be built. In this event, it will be desirable to decrease the stock on hand to the extent of providing well-seasoned timber for future use.

In my last annual report I expressed the views entertained by the Department in relation to the double-turreted monitors now in progress of construction, and which were commenced under the act of June 23, 1864. I can only repeat what I then said, adding that these vessels necessarily deteriorate in value by delay in their completion, and that when completed it is believed they will be unsurpassed by any similar

vessels of war in the world. They will add very materially to our defensive force necessary to guard the entrances to our harbors and protect the cities of our Atlantic seaboard. The Department has not felt liberty to apply any of the current appropriations to work on these monitors. That portion subject to expenditure by the Bureaus of Instruction and Repair and Steam Engineering has been used in making the necessary repairs to vessels, engines, and boilers, and in building new boilers and casting new propellers. Repairs have been made upon 76 vessels, being small upon some and necessarily large upon others. There were 10 engines, boilers, and dependent machinery thoroughly repaired, 16 new boilers built, and 3 new screw propellers cast. The whole of this work has been well and satisfactorily done, and the details of it will be found fully set forth in the reports of these two bureaus. Such also is the case in reference to the entire operations of the Department, the business of each branch of the service being explained in the reports of the several bureaus. Taken together they show that the interest of the government is carefully guarded and that of the service promoted. But for the general and cheerful co-operation of the officers of the Navy neither of these objects could be accomplished.

R. W. THOMPSON,
Secretary of the Navy.

The PRESIDENT.

PAPERS

ACCOMPANYING

OF THE SECRETARY

APPENDIX.

ESTIMATES, SECRETARY'S

*for the service of the fiscal year 1880
by the Navy Department.*

of expenditure, and explanations.

SALARIES.

21, 1879.....
 21, 1879.....
 21, 1879.....
 21, 1879.....
 21, 1879.....
 21, 1879.....
 21, 1879.....
 21, 1879.....
 21, 1879.....
 21, 1879.....

CONTINGENT.

per act June 21, 1879.....

SALARIES, BUILDING.

21, 1879.....
 21, 1879.....
 per act June 21, 1879.....
 per act June 21, 1879.....
 per act June 21, 1879.....
 per act June 21, 1879.....
 per act June 21, 1879.....
 per act June 21, 1879.....
 per act June 21, 1879.....
 per act June 21, 1879.....

CONTINGENT.

and miscellaneous items, per act June 21, 1879

PAY OF THE NAVY.

on shore or other duty, officers on waiting or-
 secretaries, clerks, extra pay to enlisted men,
 list, and changes of duty, &c.; pay of petty
 seamen, landmen and boys, including men
 for the Coast Survey service, 7,500 men, and
 by law (R. S., p. 203, sec. 1550; p. 289, sec.
 act February 14, 1879, (20 Stat. L., p. 284, sec.
 Stat. L., p. 3, sec. 1).....
 transportation of funds.....

for the above purpose for the current fiscal year
 800 men, at an average pay of \$320 per man,
 appropriated. The estimated for the next fiscal
 year for pay of 750 boys authorized to be en-

Estimates of appropriations required for the service, &c.—Continued.

estimated, per act June 21, 1878.....] 50,000 00 | 50,000 00

NO. 2.—NAVAL ACADEMY.

REPORT OF SUPERINTENDENT.

UNITED STATES NAVAL ACADEMY,
Annapolis, Md., October 22, 1879.

SIR: I have the honor to report that, in obedience to the orders of the department, I assumed the command of this institution on the 2d August last.

The academic year had closed, the cadets had been embarked on the practice vessels and sailed on their summer's cruise, and the professors and others of the academic staff, &c., had been granted their usual leave of absence.

After making myself as familiar with the Academy as the limited time would permit, I proceeded to Newport, R. I., and on the 25th August hoisted my flag on the *Constellation* and immediately proceeded to sea, in order that I might have an opportunity of witnessing the working of the ship by the cadets, and the mode of instruction imparted to them aboard ship, &c., all of which was entirely satisfactory to me.

The *Constellation* arrived at the Academy on the 29th August, and the practice steamers *Mayflower* and *Standish* the next day, when the cadets were disembarked, and all whose good conduct merited it were granted one month's leave of absence.

The examination of candidates for appointment as cadet-engineers commenced September 15. One hundred and seventy-seven reported for examination; 18 were found physically disqualified for the service, and 159 were subjected to competitive examination, and a report of the same forwarded to the department; when, in conformity with the law,

the first 25, viz, those who passed highest in order of general merit, were appointed cadet-engineers and received into the Academy.

The examination of candidates for admission as cadet-midshipmen commenced September 22. Fifty-two have reported for examination; 2 were found physically disqualified for the service; 1 declined to submit to the physical examination; 16 failed to pass the mental examination, and 33 were found duly qualified for admission and received into the Academy; making 253 cadet-midshipmen and 99 cadet-engineers; total, 352 cadets now in the institution.

The estimates for the support of this institution for the fiscal year ending June 30, 1881, were transmitted to you on the 13th instant.

The report of Commander F. V. McNair, U. S. N., of the practice cruise of the *Constellation* and accompanying copies of papers, and of the reports of the instruction of the cadet-midshipmen in professional branches; and also of Lieut. Commander W. M. Folger, U. S. N., of the report of the cruise of the practice steamers *Mayflower* and *Standish*, together with the reports of the instruction of the cadet-engineers in professional branches meet my hearty approval, and are transmitted herewith for the information of the department.

I am, sir, very respectfully, your obedient servant,

GEO. B. BALCH,
Rear-Admiral, Superintendent.

Hon. R. W. THOMPSON,
Secretary of the Navy, Washington, D. C.

REPORT OF THE BOARD OF VISITORS.

UNITED STATES NAVAL ACADEMY,
Annapolis, Md., June 10, 1879.

SIR: The Board of Visitors appointed to attend the annual examinations at the United States Naval Academy have the honor to submit the following report of their proceedings:

The Board met on the 2d instant and organized as follows: Commodore T. H. Stevens, president; Hon. M. J. Durham, vice-president; and Lieut. R. C. Derby, secretary.

The usual committees were appointed by the chairman, and at least one session held daily from June 2 to 10, inclusive.

The Board desire to express their pleasure at the promptness with which the Acting Superintendent and the officers and professors connected with the Academy have responded to their requests for information to facilitate their labors.

SEAMANSHIP, GUNNERY, AND NAVIGATION.

Seamanship.—The examinations afford evidence of careful and skillful instruction in the theory of this most important element of naval education.

The exercises on board the sloop-of-war *Dale*, under way, in which the ship was handled and all the incidental duties of seamen performed by cadet-midshipmen, with the spar exercise, sending down royal, top-gallant, and top-sail yards, housing top-masts, and striking lower yards,

n part, were very satisfactory, affording a striking illustration of the advantages which attend practice.

In the theory of gunnery, the instruction is sufficient as it is; also in practice, so far as the means of the Academy permit. It is recommended that a steam-vessel of 500 or 700 tons be stationed at the Academy for gunnery practice. At present the instructors are limited to the Santee, which is for this purpose as immovable as the dry land, and the monitor, which, though most valuable as a special type of vessel, is so slow that firing from her is practically firing from a stationary platform. Such a vessel as indicated would be able to maneuver round a target. With a light battery of rifled and smooth-bore ordnance, the expense of practice would be no greater than at present, while the eye would receive that education in following a shifting target which is so essential at sea. Such a vessel would afford special advantages for practical exercise with the steam-engine and the handling of a steam-vessel, as well as for practice cruises at sea.

The system of instruction in theoretical navigation, with practical work at the Academy and on the practice cruises, affords all that is required to prepare an officer to navigate a ship or to make hydrographic surveys.

STEAM.

The department of steam engineering is found to be admirably conducted and in a very efficient condition, the instructions given in its theoretical branches being thorough. The practical instructions are also thorough and excellent, as far as the facilities for the same will permit.

The designing of marine-engines, screw-propellers, boilers, and various kinds of machinery, both general and in detail, involving as it does an extensive knowledge of descriptive geometry, is very efficiently taught; and the instruction of the use and manipulation of the several organs of machinery and generators, and the application of steam to useful purposes, is performed in the most complete manner by means of proper apparatus; besides which, the practical operation of working marine-engines, firing and feeding boilers, is efficiently done on board the monitor Nantucket afloat; also, by operating, connecting, and disconnecting the parts of the marine-engine erected on shore, thus leaving but little improvement to be desired in this direction. In order, however, that the education of the cadet-engineer may be more extended and thorough in not only a knowledge of the theory, the designing, and the varieties of metals employed, but also in a knowledge of the best methods of manufacturing the best materials, and practically executing with tools all work entering into an iron ship of war and the machinery for it, we recommend that the tools and facilities be increased, which shall include appliances for iron boat-building, and for laying down the lines of vessels and designing the detailed parts of the same. This may be inaugurated in an economical way by building small cutters and boats for the Navy, including the machinery to accommodate the necessary additional appliances. The enlargement of the building has been recommended by this and the last Board.

MATHEMATICS AND MECHANICS.

The instruction in mathematics and mechanics is given with manifest thoroughness and enthusiasm, by means of elective branches which the

are decided in the opinion, that the best interests of the service and the truest economy to the nation demand that the present standard for admission should be materially raised, so that the highest efficiency of the service may be secured, not only through the character but by the exact scholarship and the thorough scientific training of its officers.

The principle of competitive examinations before admission has already been applied to the cadet-engineers. The Board can see no reason why this system should not be extended to the appointment of cadet-midshipmen by members of Congress, and they are of opinion that it would exclude from the Naval Academy many candidates for admission whose acquirements and natural qualifications unfit them for its privileges. Passing from this subject, the Board remark that the tendency of an exclusive or purely professional education is apt to be a contracting one, and hence the importance of those studies which, while indispensable to an education for a particular profession, are broadening in their influence upon the character and intellect and tend to the highest development of an educated man. Of this class are the studies known in the academic course as "English studies," and embracing (besides those which the Board consider as being properly preliminary) rhetoric and the practice of composition; history, both European and American; the Constitution of the United States and international law, together with the examination of those general principles which control the complex relations of individuals and of nations. The importance of these studies to the officers of the United States Navy cannot be overrated; they fit them for association with the best trained minds with which they may come in contact; they render easy the subsequent acquirement of knowledge; they impart dignity, precision, and grace to their literary work, and they fit them for the sound decision of those complicated questions upon which may depend the issues of peace or war.

The Board have carefully investigated the methods of instruction in the department, and they cannot too highly commend them. The proficiency of the cadets is also gratifying. The Board earnestly recommend the enlargement of the course of instruction in English studies by the addition of moral and intellectual philosophy, political economy, and especially of the law of courts-martial. More work should not be required of young men already heavily burdened, but the elimination from the course of purely elementary studies will admit of the introduction of the higher branches.

The Board also think that additional interest would be imparted to the graduation exercises if essays upon professional subjects should be read or delivered by the most distinguished members of the graduating class. The introduction of this system would operate as an incentive to the cadets to perfect themselves in composition and elocution, and would continue throughout their academic course the principle of competition which has proved in other institutions of learning of most enduring value.

GROUND, PUBLIC BUILDINGS, AND SANITARY CONDITIONS.

The Board find that the grounds of the Academy are in a highly commendable condition, and also that the various quarters and buildings are in good order, and, with some exceptions hereinafter mentioned, well adapted to their several uses, and that the sanitary condition of the institution is all that could be desired.

REPORT OF THE SECRETARY OF

The exceptions to which the Board desire to
First. The building used for the cadet-quarter
h the requirements of the Academy, and the
v existing, necessitates an increased amount o
l lessens the efficiency of discipline. The Bo
ommend the addition of a wing to the rear
er that the entire body of cadets may be dom
Second. The Board would especially urge that
ng the basement, or lower story, of the cadet-
ate for the purpose, and also for sanitary r
moved into a separate building to be erected f
Third. The Board cannot too strongly recomm
nory, the building now used for that purpose l
iscredit to the government. It is an old wood
outside braces to prevent it being blown o

Fourth. The wooden building and the old hull
e barracks is not only unsafe and unsightly
proper protection and comfort of the men,
ly replaced by a proper building to be erected
Fifth. The Board finds that there exists su
reased accommodation for necessary additiona
practical work required of the cadets study
nch, that they beg to repeat the earnest r
ard of 1878 for the enlargement of the steam-
Sixth. The messroom for officers in the old qua
attractive. The Board therefore recommend
t reception-rooms be refurnished and repainte
The Board are well aware that these addition
ail a large expenditure, requiring the action
nestly recommend such legislation as will ful
t alterations and improvements herein sugges
The Board, being informed that the regulations
hibiting the use of tobacco as a wise sanitar
forced, would most respectfully recommend the
at once restored, as in their judgment the reg
any form cannot be too stringent.

FINANCE AND LIBRARY.

The Board have examined the books of the first
, and also the books of the treasurer, and find
the former and the payments made by the latt
They also find that these officers have been
king the expenditures, and the amounts app
nt for the remainder of the fiscal year for th
t in the appropriations.

They have also examined the manner in which
They seem to be plain, simple, and
e store seems to be kept in a bus
ge have, no doubt, kept an accur
cadets, and have charged them ver
We are gratified in saying the who
ell conducted.

We have also looked into and examined the library. We are pleased to see the officers of the Academy taking such a lively interest in a good library. The present library is a very good one, and is in excellent condition. It contains many rare and valuable works, and while Congress has been making a reasonably good annual appropriation for its general increase, yet in consideration of the fact that the officers and cadets must necessarily be conversant with all the recent scientific works in this department, and as these are very expensive, the present appropriation is hardly adequate to purchase the necessary books; and we therefore recommend that the appropriations for books for the library be increased \$500, making it \$2,500 instead of \$2,000. The librarian should have ample means to purchase all the useful and scientific works connected with this important branch of the public service.

ADMINISTRATION AND POLICE.

The Board have examined into the general conduct and management of the institution, the discipline of the cadets, and the police regulation of the grounds, with much care. Some of the rules and regulations would seem to be harsh and unnecessary; yet, when we consider the large number now in attendance, and that irregularities on the part of a few must necessarily produce more or less confusion on the part of all, the discipline must be rigid and strictly enforced. We find that, as a general thing, the cadets observe the rules and regulations of the institution with the same alacrity and delight as they would have those do in after life who may be placed under them in their respective commands. We therefore have no change to recommend.

MISCELLANEOUS.

Inasmuch as the academic course prescribed for the cadet-midshipmen is by statute six years, the two years during which they are on board ships of war in commission prior to graduation are presumed to be included in the academic course, in order that they may attain the proficiency in the profession which can be acquired only in the actual application of theoretical knowledge. It is therefore eminently proper that the attention of commanding officers, to whose fostering care the cadets are committed, should be called to the great importance of affording them ample opportunities of so applying their theoretical knowledge in navigating and in working ship, as well as in performing such other duties as may tend to promote their familiarity with actual seamanship for upon their skill will depend the efficiency of our Navy of the future.

For the better instruction of the cadets in iron-ship building, we would respectfully recommend that models of the bow and stern frames and midship sections of the different systems in iron or steel be furnished the department of seamanship, as it is only by illustrations of this kind that accurate knowledge can be conveyed of the different frames and fastenings. The department has now models in wood, by which instruction in that branch is greatly facilitated and simplified.

The Board recommend that the vessels known as the Essex class of vessels shall, upon their return from sea, be sent to the Naval Academy to be overhauled and refitted in everything pertaining to their machinery, engines, and boilers by the cadet-engineers. We think that this

ould be a saving to the government, and that it would greatly promote the knowledge of practical steam-engineering among the cadets.

The Board recommend that transoms be cut over all the doors of the ward-house, and that the balconies be extended the entire front of the building.

The Board recommend that the heads of departments of modern languages and of drawing should, by appropriate legislation, be given permanent positions in the Navy. The Board consider that their duties are of the utmost importance, and that they have been discharged with skill and fidelity; and therefore earnestly recommend that their status be a permanent one, and that special chairs be established by legislation for this purpose.

The Board cannot conclude this report without expressing its profound sympathy for the family of the late Superintendent, Commodore Foxhall Parker, whose long and serious illness has for many months deprived our country and the Naval Academy of the services of one of its ablest and most accomplished officers, who died on the last day of the session of this Board.

The Board further desires to express its high appreciation of the ability and zeal displayed by the Acting Superintendent, Commander F. McNair, under whose wise and judicious management they find the Naval Academy in a thoroughly satisfactory condition.

T. H. STEVENS,
(Commodore, U. S. N.,) *President*

M. J. DURHAM,
Vice President, Danville, Ky

J. W. KING,
Chief Engineer, U. S. N.

JAS. GRANT WILSON,
New York City

ELI H. MURRAY,
Louisville, Ky

WM. GODDARD,
Providence, R. I.

JOHN M. BROOKE,
Lexington, Va

W. R. MYERS,
Anderson, Ind

E. BUSHNELL,
Fremont, Ohio

H. B. ANTHONY,
Providence, R. I.

J. R. McPHERSON,
Jersey City, N. J.

Hon. R. W. THOMPSON,
Secretary of the Navy.

No. 3.—BUREAU OF ORDNANCE.

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
Washington City, October 1, 1879.

SIR: I herewith submit the annual report of the operations of the Bureau of Ordnance, with detailed estimates of the amounts required for the fiscal year ending June 30, 1881.

ESTIMATES.

1. Labor, tools, materials, and fuel used in fitting ships for service, and preservation of ordnance and ordnance stores, repairs to buildings, magazines, wharves, gun-parks, tugs, lighters, and boats.....	\$225,000 00
2. Torpedo service	45,000 00
3. Miscellaneous items, freight, telegrams, postage, advertising, &c	3,000 00
4. Civil establishment at navy-yards.....	11,886 25

284,886 25

The estimates are the same as the sums appropriated for the current year, based on the actual expenditures at the several yards and stations in fitting ships for sea and in the preservation of ordnance material.

The last year has been one of great advance in developing the force of penetration of rifle projectiles and of concurrent efforts to produce armor of greater resistance with the same weight. In the case of the gun, it has been done by the application of well-known principles, but increase of length and diminution of caliber are perhaps carried to an excess. With the reduction of caliber, the shell is necessarily of small capacity, incapable of inflicting vital injury, and combats would be of long duration as before the introduction of shell firing. In naval combats the object is to lodge a powerful mine in the side or in the interior of the ship, which requires a large capacity shell; to penetrate armor plates, small diameter and great hardness and tenacity of material in the shell are necessary. It is probable that we have not reached a final solution of the problem, and that nothing has been lost by our enforced delay. It is, however, quite evident that all the older systems of naval ordnance are obsolete and monster iron-clads of less importance. The progress of metallurgy gives promise of obtaining suitable material with which to construct our future armaments whenever proper appropriations are made.

The monitors now building will each require two 10-inch rifles, which is deemed the most suitable caliber, as their projectiles will penetrate any vessel now built or building which can safely cross the Atlantic.

The conversion of XI-inch smooth-bore to 8-inch muzzle-loading rifles is continued, as it has proved a very safe and efficient gun.

The 60-pounder muzzle-loading Parrott rifles are also being converted to breech loaders.

The 80-pounder breech loader has been mounted on the Tennessee.

The Hotchkiss magazine rifle, caliber .45, has been adopted for the naval service, and is now issued to ships. It is an arm of remarkable simplicity and efficiency, not likely to be soon superseded by later inventions, and is one to which detachable magazines hereafter devised may be applied.

With the change of caliber of the shoulder gun it became necessary, in order to avoid confusion on board ship, to alter the machine guns to the same caliber. The bureau has therefore made arrangements for the con-

ersion of 30 of the Gatlings to the latest and best model, which is much more efficient.

No funds have been available for the purchase of the larger class such as the Hotchkiss revolver cannon, which now form such powerful adjuncts to the defense of ships against movable torpedoes.

The Torpedo School at Newport has graduated the usual class of numbers.

But little improvement has been made in either the offensive or defensive use of torpedoes. Some experiments have been made with a very simple aggressive torpedo, devised by Captain John Ericsson, to be propelled from a gun of heavy caliber by a charge of powder, the force limited and controlled by the amount of air-space. It was demonstrated that the torpedo pursued a course corresponding with the curved line of flight, the final inclination coincident with the angle of fall; also that the trajectory could be flattened and the angle of inclination of the torpedo varied by the use of vanes or wings. Further experiment will be necessary to determine the conditions requisite in practical use.

I have the honor to be, very respectfully, your obedient servant,

WILLIAM N. JEFFERS,

Commodore, Chief of Bureau.

Hon. R. W. THOMPSON,
Secretary of the Navy.

No. 4.—BUREAU OF EQUIPMENT AND RECRUITING.

NAVY DEPARTMENT,
BUREAU OF EQUIPMENT AND RECRUITING,
Washington, October —, 1879.

SIR: I have the honor to submit herewith the annual report of the Bureau, with accompanying detailed estimates for the fiscal year ending June 30, 1881.

These estimates conform to the appropriations made for the fiscal year 1879-'80, with the necessary addition of \$90,000 under appropriation "Pay of the Navy," and \$5,000 under appropriation "Contingent Equipment and Recruiting," to enable the bureau to comply with the act of May 12, 1879, authorizing the enlistment of 750 apprentices at \$100,000 additional, under "Pay of the Navy," for pay of 500 enlisted men, \$2,400,000 being required for that purpose, whereof \$2,300,000 was appropriated for the current fiscal year.

During the past fiscal year 77 vessels have been either wholly or partially equipped at the several navy-yards, at an expenditure for labor of \$105,815.53, and for material of \$549,011.57.

Forty-one thousand three hundred and thirty-two tons of coal have been purchased at home and abroad, costing, including freight, \$97,531.

Two hundred and twenty-seven thousand one hundred and nine pounds of Russia, 336,150 pounds of Manilla, and 112,775 pounds of American hemp have been purchased, at an aggregate cost of \$3,675.78.

There have been no contracts made during the past fiscal year; the supplies needed from time to time have been purchased in small quantities under "open purchase"; and experience has satisfied the bureau

t this mode of making purchases is more advantageous to the government, and more especially so under present limited appropriations supplies.

ROLLING-MILL.

The new rolling-mill at the Washington Navy-Yard has proved a perfect success, and since its erection, in 1878, has accomplished a saving nearly \$12,000, being more than \$2,000 over and above its original cost. It is now furnishing large quantities of round, bar, flat, and angle iron for the use of the several Bureaus, and is capable of producing plate-iron, of a superior quality, weighing 800 pounds. With a moderate additional expenditure, all the plate-iron required for the manufacture of boilers for the Navy could, in my opinion, be made at this yard. The erection of this mill has enabled the bureau to re-work and utilize all the condemned chains and iron which have been accumulating for many years at the different navy-yards, thereby supplying the navy with an excellent quality of iron and effecting a great saving to the government. The capacity of the mill, at the present time being sufficient to meet all the demands made upon it, and in view of its great success, I would recommend that two additional furnaces, with rollers and hammer, be erected at a cost not to exceed \$8,000.

WIRE BOARD.

The board for testing different kinds of iron and steel wire completed its work some months ago. The results have been published and give general satisfaction. By purchasing wire direct from the manufacturer the bureau has effected quite a reduction in that item of expenditure.

ROPE-WALK.

The rope-walk at the Navy-Yard, Boston, Mass., has undergone the much-needed and quite extensive repairs during the past summer, and is now in complete working order.

During the year 848,726 pounds of cordage have been manufactured, comprising all the hemp, wire, and hide rope required for use in the navy.

ANCHORS AND CHAINS.

All the anchors and chain cables used in the Navy are manufactured at the Washington Navy-Yard.

The Bureau has been and is still making experiments with anchors of different patterns, in the hope of obtaining a satisfactory non-sealing anchor which will fulfill all requirements.

GALLEYS.

All galleys required on board of our men-of-war are also manufactured at this yard. Improvements are constantly being made in their construction, with the view of supplying the many wants so essential for proper preparation of food.

COAL.

During the year advantage was taken of the low price of coal and efforts were made to fully supply our several coal depots and stations. In order to stimulate our own industries, instructions have been given to the

during the summer cruise for cadets 371 men are required to man practice ships. Thus we find an aggregate of 375 men in winter 646 in summer, employed in a useful yet special service, and not liable for regular cruisers.

therefore respectfully recommend that legislation may be asked for make the allowance of men required for these two branches of the service, viz: the Coast Survey and the United States Naval Academy, special one, and independent from the allowance of men for the Navy.

TRAINING SYSTEM.

the reports from the commanding officers of cruising-ships who have saved boys from the training ships, speak in the highest terms of them.

the Bureau is satisfied that, with judicious care in handling, and attention on the part of the officers in instructing these boys, the service, in a few years, will be supplied with a superior class of intelligent, well-trained American seamen, of whom the nation may justly be proud. On the 12th of May last, Congress passed an act allowing 750 boys to be enlisted annually, in addition to the 7,500 men and boys already provided by law; at the same time changing the ages at which these boys should be enlisted from 15 to 18 years, instead of from 16 to 18 years. I think it would have been more satisfactory if the law had been so modified as to have taken them between the ages of 14 and 16 years, as boys are then more satisfactorily managed, and are not so sure as to have acquired fixed habits.

Shortly after the passage of the law, steps were taken for the enlistment of boys in different sections of the country, recruiting heretofore being principally confined to the seaboard. Accordingly the United States steamer Wachusett was dispatched up the Mississippi river, with instructions to proceed as far as Saint Louis, Mo., and to recruit at different places, both going up and returning. On account of insufficient depth of water, she failed to reach her destination. However, an rendezvous was opened in Saint Louis, and it required but a short time to fill the quota allotted to that section.

At the same time instructions were given to the United States steamer Michigan to recruit at numerous places on the lakes; the United States steamer Minnesota was sent up the North River; the United States ship Saratoga and United States ship Portsmouth touched at many of the Eastern ports during their summer cruise, and in this way, from the passage of the law to this date, upwards of 600 fine, healthy, bright lads have been recruited, representing almost every State in the Union.

Early in the season it was thought advisable to have the training ships assemble at Hampton Roads during the month of October for drill and exercise. Instructions were accordingly given to that effect, and at the inspection which took place on the 14th and 15th instants we were satisfied with the very creditable manner in which the boys acquitted themselves.

The old frigate Constitution has lately been added to the list of training-ships, and I find it necessary to have at least one more vessel added to the number, in order to keep the boys up to the many requirements. With four cruising-ships, I would recommend that they all cruise during the summer. In winter, while two might make a southern cruise, the other two could be profitably employed at the headquarters for training-ships, in refitting, &c. I find the Minnesota entirely too large for a training ship, and in that capacity very expensive. I would

Therefore recommend that she be used as a headquarter's ship, and be stationed permanently at some convenient naval station to receive and prepare boys for the cruising training-ships.

Numerous complaints are constantly being received concerning the ration, not so much on account of the quantity as the variety. I would suggest that a board be ordered to thoroughly investigate the matter, and to recommend such changes as might be consistent.

In May last, Lieutenant-Commander Chadwick, U. S. N., who was sent in England, was instructed to visit the different training stations in England and France, and make a report upon them to this Bureau.

The report has been received and gives great satisfaction, and in a printed form would be of much service to the officers connected with the training system. I would recommend a limited number be printed for that purpose.

In conclusion, I earnestly renew the recommendations of my predecessor in office, that an outfit of clothing be furnished gratuitously to men and boys upon their entering the service for three or more years. This practice prevails in the Army and Marine Corps, and it would seem nothing more than justice that "Jack" should have the same. By its adoption in the Navy, I am satisfied it would tend very materially to reduce the number of desertions. This allowance is especially desirable for the boys. Their pay on entering being so small, the plainest outfit of comfortable clothing keeps them in debt many months, thereby tending to dishearten them at the start, and to give them a distaste for the service. It must be remembered that the clothing they bring with them from their homes is all lost, for nothing but uniform is allowed to be worn on board ship.

Very respectfully, your obedient servant,

EARL ENGLISH,
Chief of Bureau.

Hon. R. W. THOMPSON,
Secretary of the Navy, Washington, D. C.

NO. 5.—BUREAU OF NAVIGATION.

BUREAU OF NAVIGATION, NAVY DEPARTMENT,
Washington, D. C., October 25, 1879.

SIR: I have the honor to submit the following report of the Bureau of Navigation for the past year, together with the estimates for its support, and for the expenditures that will probably be required in that division of the naval service committed to its immediate charge, for the fiscal year ending June 30, 1881. Included in this report, and transmitted herewith, are the reports and estimates of the several offices under its cognizance, and an abstract of offers for supplies received.

NAVIGATION.

In the allowance of nautical instruments and other navigation supplies, no change has taken place during the past year. Appropriations, the stock of instruments could not be replenished, but those available were kept in good order. The system of instruments used in the Navy is well established, and the case with chronometers, liquid compasses, and bar-

meters, and it is also gratifying to state that these instruments, as well as sextants, octants, quadrants, surveying and other instruments of precision, of excellent quality, can now be obtained from American makers. Only in the matter of superior binocular glasses the Bureau had to resort to foreign manufactures, and it is hoped that this branch of industry may soon be developed to make importations unnecessary.

Unless some emergency arises, it is believed that the supply of liquid compasses is sufficient for the service of the current fiscal year. But, if the appropriations will permit, it is proposed to add to the stock of nautical instruments a number of superior sextants and chronometers of American manufacture, to replace those to be retired from use.

Of the many compasses and sextants purchased during the late war the inferior instruments have since been gradually retired and sold, leaving, however, a considerable number of dry compasses and ordinary sextants yet on hand. There remains also from the late war a vast number of signal lanterns, running and standing lights, ordinary lamp lanterns, of obsolete forms and inferior construction, which take up considerable space in the storehouses. I earnestly recommend that legislation be obtained to sell such stores and devote the proceeds to the procurement of articles of improved kind.

HYDROGRAPHY.

I take pleasure in referring to the appended report of the Hydrographer of the operations of the Hydrographic Office during the past year, proving very efficient management of its affairs and a high degree of usefulness. It is particularly gratifying to note that the charts, sailing directions, and current hydrographic notices which emanate from this office are appreciated by mariners at home and abroad, as evinced by increased sales and by requests from foreign hydrographic offices for an exchange of publications.

The usefulness of the Hydrographic Office could, however, be greatly enhanced if more liberal appropriations were made for foreign surveying and explorations.

The examinations of the great oceans, with their innumerable rocks, islands, and reefs, real and imaginary, would seem to be the duty of the navies of civilized nations, and no more useful and creditable service can be performed by naval officers in time of peace. The labors of the several expeditions sent out from this country years ago under Commander Charles Wilkes, Commodore M. C. Perry, and Commander John Rodgers, were not only highly creditable to this country and to all who were engaged in those expeditions, but they form in many instances the only information we have at present of many distant parts of the world. The soundings made in the North Atlantic by United States naval officers were found extremely useful in the projection and laying of the Atlantic cables, and the work of Captain George E. Belknap of sounding across the Pacific Ocean is soon to bear fruit in the proposed cable connection between this country and Japan. As civilization and commerce are spreading over the globe, all work of this kind will become practically useful, and those engaged in it be honored.

Prior to and since the establishment of the Hydrographic Office of this Bureau, naval officers have been engaged in collating the many reported dangers of the great oceans. Books have been published containing descriptions of them, and their positions have been marked on the charts. It may be fairly assumed that the greater part of those dangers does not exist, and that their number was multiplied through several persons

reporting the same danger in different positions, owing to faulty reckoning and observations or to defective instruments.

But as long as these doubtful dangers to navigation are not properly examined and located, if existing, or eliminated from books and charts if not existing, their presence on the charts and books will always be a source of evil and insecurity to the mariner who has to grope his way among them to his place of destination.

I, therefore, recommend that the Department take the examination of reported dangers in the Atlantic and Pacific Oceans into serious and favorable consideration. It cannot be expected that the work here proposed can be finished in a few years or in a space of time to be stated in advance. If the Department cannot, on account of insufficiency of funds or for other reasons, fit and send out expeditions composed of a number of vessels, as was done before, it is respectfully suggested that a practical beginning be made by detailing at least one vessel for this service in the Atlantic and another for the Pacific Ocean.

Searching for hidden or visible dangers to navigation is no longer as difficult as it might appear, for with our improved sounding apparatus the depths can now be readily ascertained, and any serious diminutions in the soundings would be fair indications of the presence of neighboring shoals, reefs, or islands.

From the great number of dangers now borne on our charts, it is evident that the work here proposed will, of necessity, have to be done sooner or later. The sooner it is done the more lives and property will be saved, and every examination of a doubtful position, if properly executed, helps to lessen the present insecurity of the navigation of many parts of the great oceans.

The thanks of this Bureau are due to the commanding officers of squadrons and vessels, for the promptitude with which they complied with general instructions for the collection of hydrographic and other information useful in navigation, and with occasional requests for specific work of sounding and surveying.

In completion of the work of telegraphically determining the longitudes of the east coast of South America, Lieut. Commander F. M. Green has measured the exact difference of longitude between the observatories of Greenwich and Lisbon, thus connecting former measurements with the primary meridian; and Lieut. Commander C. H. Davis has measured in the same manner between Pernambuco and Rio de Janeiro (the breaking of the telegraph-cable between these points having prevented this measurement last year), and from Pernambuco to Para. A complete chain of telegraphic measurements has thus been made with great exactness, for the first time, from Greenwich to Buenos Ayres, establishing precisely the geographical positions of Lisbon, Madeira, Porto Grande, Pernambuco, Bahia, Rio de Janeiro, Montevideo, Buenos Ayres, and Para.

This work of fixing the geographical positions of a number of principal points on the Atlantic Ocean with almost absolute correctness is of prime importance, and the manner in which it was projected and carried out reflects great credit upon the officers engaged in it and on the Navy generally.

The United States steamer Tuscarora, Commander J. W. Philip, having, during the past season, surveyed the west coast of Mexico from Mangrove Point to Port Ventosa, has returned to her field of operations, and it is expected that the projected survey from the said port to the Gulf of Fonseca will be completed during the present season.

From the surveys thus far received from Commander Philip, it is inferred that the work will be done in a thorough and satisfactory manner, and the charts to be constructed therefrom, connecting with those of the surveys previously made under Commander George Dewey in the United States steamer *Narragansett* from the United States boundary to Cape Corrientes, will form a valuable contribution to geography and improved aids to the navigation of the waters near that part of the coasts of this continent.

Additional appropriations will be required for the preparation and publication of these surveys, as also for those made last year by Commander T. O. Selfridge, of the Amazon and Madeira rivers.

Commander L. A. Beardslee, commanding the United States ship *Jamestown*, stationed in Sitka Harbor, is employing his time in a very useful manner, in surveying and sounding, and in placing buoys and beacons for the safer navigation of the channels. All data of this kind thus far received from the *Jamestown* have been forwarded to the office of the United States Coast and Geodetic Survey for publication.

The United States steamer *Essex*, Commander W. S. Schley, before leaving the South Atlantic station for home, performed the very important service of examining the approaches to the La Plata River, proving by the many lines of soundings made off and to the shore, and by cross lines, that this examination was efficiently executed, and that the chart of the mouth of that river will be greatly improved thereby.

The United States ship *Saratoga*, Commander R. D. Evans, has obtained valuable deep-sea soundings during her late cruise to the Azores, Madeira, and Canary Islands.

From the United States steamer *Ticonderoga*, the flag-ship of Commodore R. W. Shufeldt, some interesting reports and data of explorations of parts of the coast of Liberia and the mouth of the Congo River have been received.

The collection of material for the *Sailing Directions for the Mediterranean Sea*, upon which Lieut. Commander H. H. Gorringe had been employed, has come to a close through the breaking down of the machinery of the United States steamer *Gettysburg* last spring. From the data obtained, three volumes have been published.

Commander Frederick Rodgers has sent to the bureau an interesting report of the cruise of the United States steamer *Adams* from Panama to the Samoan Islands, which contains much useful information.

The United States steamer *Wachusett*, Commander Byron Wilson, is under orders to run a line of deep-sea soundings on her way from Boston to the coast of Brazil, and to examine some reported dangers.

SIGNALS.

From the quarterly returns received from vessels in commission, it is inferred that satisfactory progress is made in the instruction and practice of signaling by the Army method.

Some very important trials of different kinds of night signals have been made during the past year at the Naval Academy, with results generally favorable to the signal invented by Lieut. E. W. Very, U. S. N.

NAVAL OBSERVATORY.

I beg leave to invite your attention to the appended report of Rear Admiral John Rodgers, of the operations of the Naval Observatory

REPORT OF THE SECRETARY OF THE NAVY.

is recommendations for an early removal of the observatory to a better site, I fully concur in; also those for increased appropriations, for amounts appropriated for several years past have been found inadequate for the maintenance of the Observatory in a manner conforming to its high standing as a national scientific institution.

NAUTICAL ALMANAC.

Report of the superintendent of the Nautical Almanac. The volumes of the Ephemeris sold and distributed for scientific and educational purposes; it is in addition of the work of preparing the annual volumes to the progress made in the investigations for astronomical tables.

It mentions that delays have been experienced in printing copies of the Nautical Almanac most needed, which it is hoped the Department will prevent hereafter.

WM. D. WHITING,
Chief of Bureau

Hon. R. W. THOMPSON,
Secretary of the Navy.

OFFICE OF SUPERINTENDENT OF COMPASSES,
BUREAU OF NAVIGATION, NAVY DEPARTMENT,
Washington, October 15, 1881

SIR: I have the honor to submit the following report for the current year:

During the past year, with the exception of such routine duty as I have devoted my whole attention towards the study of nautical magnetica. As is well known to you, I have been engaged in studies of this subject, including the theory and use of the marine compass when subjected to the influence of an iron ship, for a considerable number of years past, when not otherwise occupied with the duties assigned me, I have been employed in the construction of the compass for the use of the Navy and commerce. Various accidents have occurred from time to time from causes which have been recognized in this place in the completion of this work. I have the present expectation to have the copy of the report printed early in the coming spring.

In pursuance of your order I have recently been in communication with the inventor of a proposed apparatus for determining the magnetic variation independently of any reference to the compass on board ship. The means proposed to be employed for determining the variation are highly ingenious; but the question of the practicality of such an apparatus will essentially depend on its ability to maintain its directional relations with entire reliability, or within limits of allowable error. Of this I have serious fears. The circumstances of its use at sea, as detailed at sea, are of great importance. A careful trial of

apparatus will, however, be requisite to settle some of these questions from a practical point of view.

I am, sir, very respectfully, your obedient servant,

B. F. GREENE,

Professor United States Navy, Superintendent of the Compasses.

Commodore WM. D. WHITING, U. S. N.,

Chief of Bureau of Navigation, Navy Department.

HYDROGRAPHIC OFFICE,
BUREAU OF NAVIGATION,
October 13, 1879.

SIR: In accordance with the Bureau's order of the 4th instant, I have the honor to submit a report of the operations of the Hydrographic Office for the past year.

During the fiscal year ending June 30, 1879, the following work was done in the drafting and engraving department:

I. WORK LEFT UNFINISHED IN THE PREVIOUS FISCAL YEAR.

The engraving of the unfinished sheets of the general chart of the South Pacific Ocean in eight half sheets has been completed with the exception of one sheet, which will be completed in a few weeks. Numerous new surveys by the different maritime nations having possession on the shores of the Southern Pacific Ocean have been published during the compilation and engraving of these charts so that extensive additions and corrections have to be made on the plates before prints from them can be issued. These emendations are progressing rapidly.

The manuscript charts of the Indian Ocean in four sheets are subject to extensive corrections, owing to a new survey of the British possessions in the East Indies by the recently established Indian Marine Survey. The desire to avoid erasures in the new plates has retarded the progress of the engraving, but the manuscripts for the two upper sheets are in the hands of the engravers, those for the two lower ones being nearly finished.

The manuscripts for the four half sheets of the chart of the North Atlantic Ocean are also progressing rapidly, they being furnished to the engravers in parts, so that the drafting and engraving progress together.

As soon as these charts, with the chart of the South Atlantic Ocean, are completed, the office will be enabled to furnish to navigators new and carefully compiled charts of all the oceans, in place of the imperfect and nearly obsolete charts on various scales, from the plates purchased from E. and G. W. Blunt. These new charts will be on a uniform scale of six-tenths of an inch to a degree of longitude, a scale permitting the use in navigation close up to the coasts, and even into the larger channels, and considered the most advantageous for general use.

It has been necessary to defer the publication of a chart of the Mediterranean Sea in three sheets, owing to extensive surveys now in progress by the Italian, Spanish, and French Governments, the latter having undertaken the survey of the entire coasts of Algeria, Tunis, and Tripoli. As these surveys are now nearly completed, the work may again be taken in hand.

The engraving of the outline chart of the entire Mediterranean Sea has been finished.

Coasts and Islands of the Mediterranean Sea—Part III—by Lieut. Commander H. H. Gorringer and Lieut. S. Schroeder.

A list of Reported Dangers to Navigation in the Pacific Ocean—Part II—(numbering 1,302) compiled by Lieut. J. E. Pillsbury, U. S. N.

List of lights No. 1 on the east and west coasts of North America.

Lists of lights No. 2 on the south and east coasts of Africa and the East Indies.

List of lights No. 3 on the west coast of Africa and the shores of the Mediterranean Sea.

List of lights No 4 on the Atlantic coast of Europe, the English Channel and North Sea.

Catalogue of charts, plans, and books published by the United States Hydrographic Office.

Besides supplying United States naval vessels with all charts, books, &c., required for purposes of navigation, 6,613 charts, and 1,016 books of sailing directions, &c., have been sold through the authorized agents, and the proceeds have been deposited to the proper credit in the United States Treasury.

As information has been received, "hydrographic notices" relating to discoveries and changes in the natural features of navigable regions and "notices to mariners" relating to changes in and additions to artificial aids to navigation (lights, buoys, &c.), have been published. The arrangement and publication of this information received from many sources, and in many languages, involves great labor and care. Among other sources of information this office is constantly exchanging publications with the hydrographic offices of England, France, Denmark, Sweden, Russia, Spain, Italy, Austria, Portugal, Holland, Belgium, Germany, India, Japan, Brazil, Buenos Ayres, and Chili.

The issue of these indispensable aids to navigation has steadily grown till now the yearly issue, when bound, forms two large octavo volumes and constitutes a complete synopsis of the hydrographic work of the world.

Until the present year these notices only contained matter relating to foreign waters and coasts, but since January 1, 1879, all information received from the United States Coast Survey, the United States Light-House Board, and other sources relating to the coasts of the United States, has been published in a similar manner.

One hundred and nineteen notices to mariners and eighty-seven hydrographic notices have been thus issued during the past year.

In the meteorological department of the office, recently under charge of Lieut. T. A. Lyons, and now in charge of Lieut. C. H. Judd, compilations have been made for the formation of meteorological charts of the North and South Atlantic Oceans, similar to those of the Pacific Ocean already issued. It will require another year to complete this work and have it ready for publication. As I stated in my last report, it is proposed to continue it until the whole surface of the navigable oceans is completed.

The merchant marine has very efficiently assisted in collecting data for the work, and a number of our journals which were issued to our vessels as blanks have been returned to the office filled with useful information.

The United States steamer Tuscarora, Commander J. W. Philip, has been engaged in the survey of the west coast of Mexico and has made excellent progress, having completed the work as far south as the gulf of Tehuantepec. Four coast sheets and fifteen plans of harbors have been received from Commander Philip, the plans being in most cases of harbors of which no chart has heretofore existed. These charts are all

ject to the final corrections, which can only be made when the entire work is completed.

The very high character of the work done by Commanders Dewey and Philip on the coasts of Lower California and Mexico encourages the hope that Congress will make an appropriation for more extended surveys of the Pacific Ocean, the results of which would be of the greatest assistance to navigators, and I cannot too strongly urge that some steps may be taken to this end, in order that the numerous islands, rocks, and shoals which are now carried on the charts, the existence and positions of which are in many cases doubtful, should be accurately and finally determined.

Commander Schley of the *Essex* has rendered very valuable services to hydrography by his examination of the approaches to the Rio de la Plata, and by the zeal and energy which he has exhibited in making deep-sea soundings, and furnishing information for the benefit of navigators.

Lieut. Commander F. M. Green, with his assistants, Lieut. Commander H. Davis, Lieut. J. A. Norris, and Assistant Paymaster A. K. Michler, has successfully connected the chain of telegraphic longitudes measured from Lisbon to South America last year with the primary meridian of Greenwich, by exchanging time signals between Lisbon and Greenwich. After completing this work Lieut. Commander Green returned home, and Lieut. Commander Davis, with the other officers, proceeded to complete the chain of measurements, by the exchange of signals between Rio de Janeiro, Bahia, and Pernambuco, and by the exact determination of the latitude and longitude of Para.

This work, by instruments and methods eminently American, has fixed with unexceptionable accuracy nine secondary meridians, including the longitudes of three important national observatories, Lisbon, Rio de Janeiro, and Cordova, about the exact positions of which some uncertainty has existed.

It is very desirable that when time and opportunity permit, these observations should be extended and continued. With the wide and increasing extent of submarine cables and land telegraph lines, there is every reason to expect that the uncertainty attending the longitudes of remote points will soon cease to exist.

Since my last report a department of longitudes has been organized in addition to the other departments of this office, its object and duties being to verify all geographical positions, data for which may be received by the office from all sources, and to make and keep an accurate list of latitudes and longitudes of all points on the coasts of the world, as far as they can be ascertained.

The charge of this department has been given to Lieutenant-Commander [name], who, from long connection with similar duties, is [name].

The work of the Hydrographic Office has been continually increasing, and the work upon which it is engaged has been growing. The appropriations for its support have remained the same, and the remains of its funds for the publication of new charts and sailing-directions, it is very probable that the same time efficient, so that by the time our country has attained its position among the nations to which it is entitled

the establishment of the office was to render this country independent as regards charts and sailing-directions, it is very probable that the same time efficient, so that by the time our country has attained its position among the nations to which it is entitled

we may be independent of them by being able to furnish all desired hydrographic information from our own publications.

Very respectfully, your obedient servant,

S. R. FRANKLIN,
Captain, U. S. N., and Hydrographer.

Commodore W. D. WHITING,
Chief of the Bureau of Navigation, Navy Department.

NAVY DEPARTMENT,
BUREAU OF NAVIGATION, SIGNAL OFFICE,
Washington, October 23, 1879.

SIR: In compliance with the order of the Bureau of Navigation of the 6th instant, addressed to this office, I have the honor to submit the following report of the operations of the Signal Office during the past year:

On the 1st of May, 1879, I was placed in charge of the duties of this office, relieving Commodore J. O. Beaumont.

During the months of November and December, official experiments were carried on at Annapolis under the direction of the Bureau of Navigation with a view to determine the relative merits of several systems of night signals. The report of the board was in general in favor of the system submitted by Lieut. E. W. Very, and experiments are now in course of prosecution for the purpose of modifying this system and rendering it thoroughly practical.

Several inventions pertaining to signals that had been developed by my predecessor, Commodore Beaumont, and also several suggestions of minor importance made by foreign governments, have been examined, tested, and reported upon during the year.

The regular instruction of officers and men in the system of day and night signaling have been carefully attended to, and the quarterly reports during the year show a very satisfactory amount of progress.

The international code of day signals adopted by the Navy in 1873 having now come into general use throughout the world, and being used constantly at sea as a means of communicating intelligence, I would respectfully recommend that the scope of signal instruction be enlarged so as to include a thorough instruction of officers and men in the names and use of flags of this code.

Respectfully submitted.

C. H. WELLS,
Captain and Chief Signal Officer.

Commodore W. D. WHITING, U. S. N.,
Chief of Bureau of Navigation.

UNITED STATES NAVAL OBSERVATORY,
Washington, October 20, 1879.

SIR: In submitting the following report of the operations of the Naval Observatory during the past year, I beg leave strongly to recommend the removal of the institution to a better site.

The present grounds are malarious; the river fogs obscure the vision, rendering it less clear than in a position more removed from the water.

When the contemplated improvements are made on the river front, which seem only the question of a short time; when the marsh partly encircling the observatory is filled in, and the hill on which the build-

the land thus acquired, this part
er commerce; and its value to
cost of a new situation for the

it down, the selection of a new
r to select this new site now, for

LATORIAL.

been the same as in the preced-
ge, and Prof. Edward S. Holden,
ployed in the dome. Since last
been chiefly occupied with his

; and is in constant use. The
ronomers during the year is as

perion, and Titan, were observed
78. The inner satellite, Mimas,
on eleven nights, and by Pro-
ow accumulated a large number
illites of Saturn; and these ob-
ced and discussed for the pur-
e orbits of these satellites and

Uranus were made by Professor
s planet.

ith this instrument are the ob-
Hall. The thirty stars selected
etrical measurements by various
it nights, on an average. It was
of observations of all the pairs,
f the more difficult stars. Fewer
itly, of the pairs where the dis-
are easy; while in case of diffi-
se and differ much in magnitude,
reased. This work may now be
e necessary to add a few more
the future, it will probably be
stars of large declinations which

ry was honored by a visit from
owa Observatory, Mr. Otto Von
ve, who came for the purpose of
view of purchasing a still larger
lkowa. I am happy to say that
ind satisfactory by so competent
truve has ordered a 30-inch ob-
s, the makers of our instrument.

CIRCLE.

of Prof. J. R. Eastman, assisted
Astronomers A. N. Skinner, H.
mployed in observations of—
or clock and instrumental correc-

PERSONS ACCOMPANYING THE

and minor planets.

ations were observed in connection with observations of Venus, in 1874.

a catalogue of zone observations.

in Association Catalogue, between 120° $0'$ and

ervations of comets with the 26-inch and 9.6-inch

determination of latitude by the United States Survey, the Lake Survey, Capt. G. M. Wheeler's Commander F. M. Green, in surveys in the West

David Gill, of the Royal Astronomical Society, for the solar parallax from observations of Mars

observations made with the transit circle since 1840, 4,100. Of these observations, 81 were of the 30 of the major planets; and 146 of the minor

for 1875 has been issued since the last report, and is now in press. The work of the transit circle is better than it can be printed with the means fur-

work for 1877 is nearly finished. The observations reduced to apparent place; and the reductions of the 30 are well advanced.

the transit-circle observations efficient assistance from Lieut. E. W. Sturdy, U. S. N., from April 30 to July 1, and Lieut. E. Longnecker since November 2, 1878.

THE 9.6-INCH EQUATORIAL.

under the direction of Professor Eastman, who has been on the work with the transit circle.

in the observations of comets and occultations, and the approximate corrections to the ephemerides of the 30 are not readily found with the transit circle.

Department is under the direction of Professor Eastman. Observations, at intervals of *three hours*, begin at 11 A. M. and have been made throughout the year, by the watchmen, Morgan, and Cahill.

System of wires within the Observatory, connected with the board, and of the connections with the wires of the Western Union Telegraph Company, is under the direction of the transit circle; while the immediate charge of all their connections, is confided to Mr. William F. Smith, electrician. The connections for astronomical work remain substantially the same as during the past year. At the Observatory, this department is responsible for the motor clock, of several clocks in the State and Federal Departments; for furnishing accurate time to the Western Union Telegraph Company, and for dropping the time to the Western Union telegraph-office in New York.

Controlling the clocks in the departments are now under the complete change will soon be made, which, it is believed, will give a high and continuous control.

the method of transmitting time-signals and of dropping and New York time-balls is nearly completed, an operation by the end of October.

GEOGRAPHIC AND MISCELLANEOUS WORK.

Harkness has been assisted during the year by the following gentlemen: Lieut. T. Dix Bolles, from October 16, 1878, to September, 1879; Lieut. Thomas Perry, from November, to the end of July, 1879; Mr. Joseph A. Rogers, from August, to the present time; and by Master E. F. Qualtrough, from September, 1879. The work accomplished is as follows:

Of the late transit of Mercury were examined, and a number of them it was found that twenty-five of the Cambridge and twenty-three of the Washington pictures, and sixty of the Ann Arbor pictures, were sufficiently well defined for measurement.

One hundred and twelve plates have been read and reduced, and done in duplicate; and the computations, also, have been carried so far as to give for the Cambridge and Ann Arbor the altitudes and azimuths of the reflected images of the sun. The computations of the Ann Arbor photographs are in the same state of forwardness, but are suspended at present, as the plate used in making the pictures has not yet been received from the observatory for the determination of its thickness and refractive index. Tables have also been prepared, giving for each of the intervals of five minutes of time, 1st, the corrections to be applied for the differential refraction between the centers of the sun and planet; 2d, the position angle, upon the reflected image of the sun, of a meridian passing through the center of the true sun; and 3d, the coefficient of the variations produced in that angle by a change in the altitude and azimuth of the reflected image of the sun. The work is yet required to determine from the observations the final corrections to the right ascension and declination of Mercury.

Of Mercury made by Professor Harkness at Austin, Texas, are completely reduced, and are published in Appendix A. The observations made of the solar eclipse of July 29, 1878, at Creston, Wyo., are reduced, but have not yet been put in shape for publication.

Mars, made by Professor Harkness during the opposition of 1877, have been transformed from the orthographic to the areographic projection, and a map of the planet has been constructed. Geographical coordinates have been computed, which give directly the areographic coordinates of the center of the disc of Mars and the position of the poles as seen from the earth; the arguments being the geocentric longitude and north polar distance of the planet. As Mars will not approach so closely to the earth for many years, it was thought best to defer the completion of this work until the coming opposition can be embodied in it.

Mr. Rogers has been employed under a special appropriation in astronomical photography, and has spent much time in endeavoring to overcome the uncertainties of the emulsion. In the prosecution of this work he has prepared about fifty plates. Here it may be well to remark that our success

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lographing the total eclipse of the sun of July, 1878, was largely the excellence of the emulsion which he furnished; and the future of astronomical photography seems to a great extent dependent upon the emulsion process. Hence the importance of the experiments in which Messrs. Negus is engaged. He has also photographed the sun on every day, and has made numerous copies of the negatives of the corona during the eclipse mentioned above.

Among the minor work of the year may be mentioned the contouring of the Observatory grounds at intervals of five feet, and the examination by means of the measuring engine, of two of the micrometer screws of the 26-inch equatorial.

THE LIBRARY.

The library was placed in charge of Prof. Edward S. Holden on February 10, 1879. Almost his entire time since that date has been spent in work connected with it, to the virtual exclusion of astronomical observations proper. It is now in a satisfactory condition, and can be maintained in order by a continuance of the present system.

The books have been rearranged and bound, the pamphlets collected and arranged by subjects, and the meteorological periodicals found and made available for consultation.

A card catalogue has been begun, and over 4,000 cards made. Part of the catalogue of the library, "Astronomical Bibliography," will be published in 1879.

A complete index to the publications of the Observatory from 1845 to the present has been made. It will be printed as Appendix I to the Observations for 1876. At intervals of ten years, similar indexes should be

For 8,500 volumes of our publications have been distributed in the last twelve months and a half since February; that is about 1,000 per month, or 20 per working day, on the average. The arrears have been completely brought up.

The distribution of these volumes in the United States is done under the sanction of the department; in foreign countries, through the agents of the Smithsonian Institution. A sum of \$113.85 has been asked for indemnities to repay the Smithsonian Institution for transportation expenses already incurred.

The usual annual appropriation of \$1,000, for the purchase and care of astronomical works, should be continued.

In this connection, it may be said that our library is now the best astronomical library in the United States, and is constantly appealed to by persons not connected with the Observatory. It is highly desirable that it should be still further increased, and that this valuable collection, which, if destroyed, could hardly be replaced, should be safely deposited in a fire-proof room.

CHRONOMETERS.

There are at the present time in the chronometer-room one hundred and ten mean-time chronometers; twenty are ready for issue, twenty are on trial, and sixty-eight need repairs. There is also one sidereal chronometer.

Messrs. Negus, of New York, have in their hands twenty-eight chronometers for cleaning and repairs.

Twenty-seven chronometers have been received during the year, and twenty-four have been issued; of these, twenty-eight have been issued to vessels of the Navy and thirty-six sent to Messrs. Negus for repairs.

ty-five condemned chronometers stored away, and kept in repair to be used as "backs." Chronometers captured on the steamer Florida are stored in the chronometer-room.

ring watches and five silver watches are on hand for repair.

tower of the Western Union Telegraph Company in New York City, is dropped daily at New York noon in the chronometer-room.

This ball has failed to drop eight times—three, by order at New York; once, on account of the wire being destroyed by lightning; three times her time clock having stopped, and the changing in new instruments and telephones; and once, it will be found for its not working.

Each noon, a time-ball is dropped from the staff on the tower, and time signals are transmitted to all parts of the world.

It is managed by Prof. Simon Newcomb, secretary of the Transactions, and charged with the preparation of the reports.

NAUTICAL ALMANAC OFFICE,
NAVY DEPARTMENT,
Washington, D. C., October 13, 1879.

In compliance with your request of October 9, I beg leave to inform you that the reductions of the transit of Venus work are in the hands of the observers.

A general discussion of the observations, so far as the condition from them, is ready for the press, and there, some of which it may be desirable to publish for the commission.

The reports of the observers and the observations, is also nearly ready, so far as I have time. The observations at four of the stations were reduced by the observers, and are therefore not completely in my possession. I have made some modifications.

The discussion of the longitudes of the stations and the resources, is still incomplete, and requires some more work, which I shall be unable to give it for two or three months. The reduction of the chronometer observations is in the hands of Professor Harkness; I am, therefore, unable to give it for some progress.

The photographic plate measures, are in the hands of Professor Harkness.

I am, your obedient servant,

SIMON NEWCOMB,
Superintendent Nautical Almanac.

JOHN RODGERS,
Commandant Naval Observatory, Washington, D. C.

I am, very respectfully, your obedient servant,
JOHN RODGERS,
Rear-Admiral, Superintendent.

JAM. D. WHITING, U. S. N.,
Bureau of Navigation, Navy Department.

PAPERS ACCOMPANYING THE

NAUTICAL ALMANAC OFFICE,
BUREAU OF NAVIGATION,
• Washington, D. C., October 18, 1879.

the honor to submit the following report of the operations of the office during the past year:

An Nautical Almanac for the year 1882, containing the Ephemeris necessary for navigators, was issued in July. The large Ephemeris for 1882 has been delayed by the numerous interruptions in the work, but is now ready for the press. Of the year 1883, 75 pages are now in type and the printing is probably completed.

During the fiscal year ending June 30, 1879, 368 copies of the large Ephemeris were sold and 751 copies were distributed for the public service for scientific and educational purposes. Of the Navigators' Almanac, 1,000 copies were sold.

In connection with this action I would respectfully ask the attention of the Bureau to the inconvenience which has resulted during the past two years from the inability of the Department to print copies of the American Nautical Almanac at the times when they are required by merchant vessels. Having issued this necessary manual for more than a quarter of a century and by having made such arrangements that it has nearly always been in the market, it might be reasonably claimed that the Government has assumed the obligation of not allowing it to be out of the market while wanted by ships going to sea. But under present circumstances there is annually a period of from one to three months when this office is unable to supply the demand. The subject is submitted for such action as the Bureau may deem proper under the circumstances.

SYSTEM OF COMPUTATION.

It has been adopted of devoting the appropriation for each fiscal year to the preparation of a special volume of the Ephemeris to be published during the fiscal year following. The arrangement is such that the computations of the Ephemeris for the year 1884 shall be completed during the fiscal year ending June 30, 1880, and that the volume shall be printed during the year following, so as to be ready for sale by June, 1881. The ephemeris of the sun, and a portion of the moon, has to be prepared a year in advance of the rest of the Ephemeris, being needed in computing the latter.

The system heretofore adopted in the preparation of the Ephemeris, in which the computations are made in various parts of the office by college professors and mathematicians having other vocations, in the case of the more complex computations, especially those of the planets, this system is subject to several inconveniences and renders the work very difficult for this office to exercise the proper control and accuracy of the work. I am, therefore, of opinion that the efficiency of the office will be promoted by having all the planetary computations prepared by a single expert computer under its immediate supervision.

IMPROVEMENT OF THE TABLES.

In the regular routine of preparing and issuing the two Ephemerides, great progress has been made in the several investigations for improvements in the astronomical tables referred to in my last annual report. The work on the motions of Jupiter and Saturn has proved

was expected; but I still anticipate its completion.

ogue of all the stars used in the preparation of the
y completed by Master Chauncey Thomas, United States
aid from the other naval officers attached to the

* * * * *

s of eclipses of Jupiter's first satellite from 1668
puted from Damoiseau's tables, with a view of cor-
bervations.

clipses for the easy and rapid computation of the
luring the historic period have been prepared an-
ear.

prepare and issue all investigations of this class
d parts, in order that the mass of unfinished work
small as possible. I anticipate that the office work
be conducted with as much regularity as is possible
ances, and respectfully submit to the Department the
ag for their regular printing.

fully, your obedient servant,

SIMON NEWCOMB,
*Professor, United States Navy,
Superintendent Nautical Almanac.*

LIAM D. WHITING, U. S. N.,
Bureau Navigation, Navy Department.

BUREAU OF YARDS AND DOCKS.

BUREAU OF YARDS AND DOCKS,
NAVY DEPARTMENT,
Washington, D. C., October 23, 1879.

ice with your order of the 3d instant, I have the honor
my annual report for the fiscal year ending 30th
imates for the fiscal year ending 30th June, 1881, the
tract of offers for supplies coming under the cogni-
a of Yards and Docks for the fiscal year ending 30th

reat respect, your obedient servant,

R. L. LAW,
Chief of Bureau.

MPSON,
of the Navy, Washington, D. C.

BUREAU OF YARDS AND DOCKS,
NAVY DEPARTMENT,
Washington, D. C., October 23, 1879.

ce to your order of the 3d instant, I have the honor
al report of this bureau and the expenditures for the
June 30, 1879.

imates for the fiscal year ending June 30, 1881. The
n carefully revised, and are considered as low as the
1 require.

PAPERS ACCOMPANYING THE

the intention of the bureau is to build and repair chiefly for immediate wants, yet looking to the requirements of the future. In building, the object should always look to permanency. Wooden buildings are not durable or economical in navy-yards, and invariably entail a cost far beyond what good brick or stone structures would cost, to say nothing of the danger from fire.

In the last fiscal year no special appropriations were made except \$10,000 for stone dry-dock at Mare Island and \$20,000 for repair of ropewalk at Boston. These sums have been expended very economically. Much work has been done on the dry-dock considering the small amount appropriated for its continuance, although a large portion of the appropriation has been spent in purchasing materials.

The ropewalk at Boston has been repaired for the sum appropriated, and this important structure, it is thought, will last for many years to come.

The amount appropriated for "repairs and preservation," though judiciously and frugally expended, has proved inadequate to the wants and requirements of the several navy-yards and stations.

The store and ship houses, workshops, docks, &c., are going to decay from the want of means to preserve them.

The bureau has only been able to make temporary repairs in most cases, and when it is considered there are over three hundred buildings, most of which are large and very costly, and in addition to these the masts, masts and docks, requiring more or less repairs every season, it becomes apparent that the amount appropriated is insufficient. Every storm and gale of wind calls for further expenditure, and the result is that the means allotted are frittered away, whereas were ample funds provided much could be saved.

The remarks under the heads of the various yards and stations will inform you in detail of their condition and wants.

PORTSMOUTH, N. H.

The work at this yard has been confined to preservation; no new buildings or extensive repairs have been undertaken except that of the dry-dock. An examination showed that it required a thorough overhauling to make it serviceable. A quantity of decayed timber has been removed and replaced with new, and the dock calked inside and out and repainted. In carrying on this work the dock has been always ready for service.

The great expense incurred has absorbed so large a portion of the means appropriated for general repairs, that the bureau has been unable to do other necessary work.

Some old wooden sheds, causing constant apprehension of fire, have been removed, but this leaves valuable material exposed to the weather. I submit estimates for the following objects of improvements at this yard, viz:

foundry for steam engineering	\$17,462 25
smithery for steam engineering	7,926 25
water works	7,000 00
Total estimate	32,388 47

BOSTON, MASS.

For this yard an especial appropriation was made for repairing the ropewalk. The work has been well done, and the walk is in good condition, and will be serviceable for many years to come.

The other repairs have consisted in keeping the roofs, gutters, &c., of the yard buildings in order. In this, as in many of the yards, there are small wooden sheds and shops inviting fire and destruction to property of great value. Several of these have been removed, but it is necessary for the interests of the service that proper buildings be erected ere the remainder are torn down.

The present caisson and gates of the dry-dock have been in use for over forty-six years, and need renewing; the gates are deteriorated beyond use, and the caisson nearly so. As the use of the dry-dock depends upon these adjuncts, I recommend a small appropriation for the renewal of the same.

I submit estimates for the following objects of improvements at this navy-yard, viz:

For yards and docks workshop	\$40,000
For paving and grading	10,000
For cart-shed	7,000
For new gate for dry-dock	30,000
Total estimate	87,000

NEW LONDON, CONN.

At this station no repairs of moment have been made. The buildings have been repaired as required.

I submit the following estimate, viz:

For grading	\$5,000
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SACKET'S HARBOR, N. Y.

At this station there is a ship-house with the frame of a line-battle-ship in it; both are decaying and falling to pieces. During a heavy gale lately a part of the roof of the building was blown in, and the rest may be expected to follow during the coming winter. Should the department propose to repair the building, a survey should be held immediately and the work executed as soon as possible.

BROOKLYN N. Y.

The estimates for this yard are for purposes that are considered of great moment.

The timber-shed would save its cost in a few years.

The estimate for the yard wall is heartily approved, and will save cost, labor, and material far beyond the expense. The same may be said of the estimate for a coal depot.

The improvements in this yard, with the limited means supplied, show attention and care on the part of the officers in charge in the disbursement of the funds greatly to their credit.

I submit estimates for the following objects of improvement at this yard, viz:

For shipwrights' shed and oakum store	\$10,000
For timber-shed	5,000
For yard wall, Flushing and Washington avenues	5,000
For coal depot	20,000
Total estimate	40,000

LEAGUE ISLAND, PA.

The storm of October 17, 1878, caused great damage at this station. The dykes at various places, amounting in all to about 1,400 feet in

ngth, were washed away, and the whole island, except a small portion filled in for roadways and buildings, was submerged to the depth of 7 feet. A large quantity of material was swept away and the lives of the employés seriously exposed.

As there were no funds to repair the dyke, beyond the amount granted for repairs of all the yards, the bureau was obliged to refuse almost all its necessities to other yards, in order to rescue League Island; though taking freely from the funds allotted to other yards, the bureau has been able to do more than repair the dykes temporarily.

The estimate submitted for further improvement is very small considering the work to be done to make the place perfectly secure.

Further estimates for improvements are submitted for absolute necessities if the yard is to be utilized.

I submit estimates for the following objects of improvement at the yard, viz:

for foundry for steam-engineering	\$30,000
for dredging and filling in	75,000
for grading, graveling, &c.	5,000
for improvement of dykes.....	60,000
for masting sheers.....	12,000
for finishing docking apparatus and mold loft.....	10,000
Total estimate	192,000

WASHINGTON, D. C.

The work in this yard has consisted of repairs and improvements of officers' quarters, workshops, wharves, roads, &c. You will observe that no special appropriation is suggested by the commandant except for the purchase of a lot near the western boundary of the yard, the purchase of which will add greatly to the accommodations in that quarter.

The bureau commends this yard for its good order, efficiency, and very marked economy in the expenditures.

Your attention is respectfully called to the importance of improving the Eastern Branch of the Potomac. Several thousand dollars have been appropriated in the last two years for deepening the Potomac from Georgetown down to near Alexandria, but not a dollar for the Eastern branch. Each year adds to the labor, danger, and expense of getting ships of very moderate draught to and from the yard. It is suggested that piles be placed above Uniontown Bridge to deflect and narrow the current so that the increased velocity will deepen and keep an open channel to the Potomac proper.

The bureau advances no opinion as to whether the channel should be deepened by dredging or as above noted.

I submit the following estimate for this yard, viz:

for purchase of square No. 853.....	\$12,604
-------------------------------------	----------

NORFOLK, VA.

Owing to the heavy gale of wind and rain at this place in August last, great damage was done to the buildings, wharves, roadways, &c. An extraordinary expenditure of about \$12,000 was required to repair the dilapidation. The damage sustained has not yet been made good; the means allowed have been expended with great care, and in a few days it is supposed the yard will be in fair order.

During the year ending June 30, 1879, repairs have been made to buildings, wharves, roadways, &c., as required. The allotment to the yard is too small to allow extensive work, even in repairs.

This yard, situated in a climate that permits work the entire year in a harbor that can be entered by our heaviest-draught ships, with easy access by rail and water to our great coal and iron mines, calls for special attention of Congress as a naval station.

I submit estimate for the following objects of improvement, viz:

timber-shed No. 32	\$40,925
timber-shed No. 33	40,925
coal-house No. 54.....	30,000
two cisterns	9,485
chain and cordage store No. 63	5,000
Total estimate	126,335

PENSACOLA, FLA.

At this yard no work has been done beyond keeping wharves, bridges and buildings in repair. Estimates for necessary improvements are herewith submitted:

timber-shed No. 11.....	\$28,590
spar and cooper-shop No. 38	36,030
Total estimate	66,620

MARE ISLAND, CAL.

Confined to the usual appropriations for repairs, I have taken at this yard. The special appropriation was expended with very marked advance to renew my observations as to the great amount of work being appropriated as will permit the work to be advanced beyond the danger that arises from the pier-dam giving way, the liability of such disaster.

It is a source of constant care and expense. To meet the need for \$45,000 during the year for repairing the pier, the means in part to meet this emergency the board has decided to omit necessary repairs at other yards. The board has authorized the expenditure of \$5,000 for the pier in this dock, and either the dock must be given up or other funds to complete the repairs.

I am deemed necessary for keeping the yard in repair to repair the naval ships in the Pacific Station.

I submit estimates for the following objects of improvement at this yard, viz:

continuation of stone dry-dock.....	\$400,000
roads and pavements (stone).....	10,000
renewing plank-road.....	1,000
extension of timber-shed No. 94.....	10,000
.....	421,000

KEY WEST, FLA.

During the past fiscal year slight necessary repairs were made to the buildings and shops, and the wharf almost entire

PAPERS ACCOMPANYING THE

submit estimates for the following objects of improvement at
on, viz:

ca-wall and filling in front of storehouse	\$7, 00
ommencing permanent bulkhead of concrete	5, 00
rection of double house for officers' quarters	4, 00
Total	16, 00

NAVAL ASYLUM, PHILADELPHIA, PA.

n the 1st July, 1878, there were 13 officers, 29 attendants, and
ficiaries on the rolls of the asylum.

uring the fiscal year ending 30th June, 1879, 36 beneficiaries
. admitted, 10 have died, 6 have been dismissed for misconduct
2 were discharged at their own request.

nder the administration of the present able governor this institu
been kept in admirable condition, and everything has been don
er the condition of the beneficiaries as comfortable as possible.
ie expenditures during the fiscal year ending 30th June, 1879, 1

1—

ay and pocket-money of beneficiaries	\$3, 20
obacco	1, 20
othing, boots and shoes	7, 40
ubsistence	16, 20
aints, dry goods, lumber, coal, wood, provender, hardware, miscella- ous, and house sundries	6, 40
ay of employes	7, 80
epairs and preservation of all kinds	4, 40
water rent and gas	1, 70
emetery and burial expenses	3, 00
mprovement of grounds	4, 00
ar tickets	1, 00
ce	1, 00
Total	50, 20

stimates have been submitted by the governor of the institution
upport during the fiscal year ending 30th June, 1881, amounting
aggregate to \$79,465.

ccompanying this report is an abstract of offers for supplies rece
furnishing articles coming under the cognizance of the Bureau
ds and Docks, made in conformity to act of Congress appro
ch 3, 1843.

y direction of the department I respectfully submit the follow
nates for the fiscal year ending 30th June, 1881:

t No. 1. For support of Bureau of Yards and Docks	\$12, 50
t No. 2. General maintenance of yards and docks and contingent	460, 00
t No. 3. Support of Naval Asylum	59, 30
t No. 4. Repairs and preservation of navy-yards	300, 00
t No. 5. Improvements at navy-yards	75, 00
t No. 6. Civil establishment	42, 80
Total estimates	949, 60

I am, very respectfully, your obedient servant,

R. L. LAW,
Chief of Bureau

on. R. W. THOMPSON,
Secretary of the Navy, Navy Department, Washington, D.C.

No. 7.—BUREAU OF PROVISIONS AND CLOTHING.

BUREAU OF PROVISIONS AND CLOTHING,
October 30, 1879

SIR: I have the honor to submit herewith, in accordance with your instructions of the 3d instant, estimates marked A, B, C, D, and E, for the fiscal year ending June 30, 1881, together with schedules number 1 to 6, inclusive, and statement No. 7, pertaining to the operations of this bureau during the year ending June 30, 1879.

Since my last report there has been established at the inspectory-yard, Brooklyn, a system for finishing and cutting clothing naval, and making garments of the present patterns for the navy. A room, with the necessary machinery, has been completed and the making of the garments is being done by worthy and needy men, so many of whom are found in the vicinity of our large cities. The clothing is issued on board vessels at its actual cost, and without stock on hand, of material purchased at high prices, is exhausted. Nothing can be cut and made at a less rate than could be obtained under the contract system, besides being of better workmanship and more strictly in accordance with the prescribed uniform.

By the establishment of this system, which has already proved a success, but a very small stock of made-up clothing need be kept on hand, thereby saving the government great loss in deterioration and destruction of such perishable matter.

The new labor now being performed in the manufacture of clothing at the navy-yard, New York, necessitates the employment of an additional laborer, for the payment of whom the amount of \$1,017.25 is included in the accompanying estimates.

Respectfully,

Hon. R. W. THOMPSON,
Secretary of the Navy.

GEO. F. CUTTER,
Paymaster-General, U. S. N.

Schedule of proposals for fresh provisions, navy bread, baking, and water, received during the fiscal year ending June 30, 1879, the supplies to be delivered during the fiscal year 1879-80.

Name.	Where to be delivered.	Fresh bread.	Fresh beef.	Vegetables.	Navy bread.	Baking.	Water.
		Per pound.	Per pound.	Per pound.	Per pound.	Per bbl. of flour.	Per gallon.
	Portsmouth, N. H.	\$0 08	\$0 08	\$0 01½			
	do		06½	01½			
	Boston, Mass		10	01½			
	do		11	01½			
	do		10½	02½			
	do		11½	02			
	do	06				\$1 75	
	New York, N. Y.		06½	01			
	do		11½	02½			
	do		06½	01			
	do		12½	04			
	do		12½	04			
	do		12½	04½			
	do	03					
	do	06½					
	do	06½					
	do	01½					
	do	02½					
	do	00					
	do					94½	
	do					80	
	League Island, Pa.					1 44	
	do					1 39	

4.—Schedule of proposals for canned stores, received during the fiscal year ending June 30, 1879.

Name.	Date of proposals.	Where to be delivered.	Butter.		Preserved beef.		Evaporated apples.		Compressed corned beef.	
			Amount.	Per lb.	Amount.	Per lb.	Amount.	Per lb.	Amount.	Per lb.
H. K. & F. B. Thurber & Co*.....	Sept. 4, 1878	New York	800 pounds, in 1 pound tins	\$0 28½						
		do	3,200 pounds, in 2 pound tins	27½						
		Boston	400 pounds, in 1-pound tins	28½						
		do	1,600 pounds, in 2-pound tins	27½						
		do	480 pounds, in 3-pound tins	31						
Simpson, McIntire & Co*.....	Dec. 24, 1878	do	2,020 pounds, in 7 pound tins	30						
		New York	1,056 pounds, in 3 pound tins	31						
		do	4,944 pounds, in 7 pound tins	30						
		Norfolk	864 pounds, in 3 pound tins	31						
		do	4,136 pounds, in 7-pound tins	30						
Libby, McNeill & Libby W. K. Lewis & Bros* Barnham & Merrill	Jan. 2, 1879	New York			100,000 lbs	\$0 12½ 11½ 14 12				
		do					10,000 lbs	\$0 16	10,000 lbs	\$0 13½
		do								
		do	10,000 pounds, in 7-pound tins.	28						
		do			100,000 lbs.	15				
		do	15,000 pounds, in 8-pound tins	30						

* Contract awarded.

Schedule of proposals for tobacco, received during the fiscal year ending June 30, 1879.

Name.	Receipt of proposals.	Amount required.	Price per pound.
		<i>Pounds.</i>	
Willard & Co	Sept 10, 1878	60,000	\$0 48½
Mayo & Brother*			46½
Man & Drummond			54
Mayo & Brother*	Mar. 18, 1879	20,000	48½
Spicer*	June 23, 1879	60,000	38½
Mayo & Brother			40½

* Contract awarded.

Schedule of proposals for seven sets of stationery, received during the fiscal year ending June 30, 1879.

Name.	Where to be delivered.	Total price.
Sam H. Dempsey	Washington, D. C	\$437 50
Sam Ballantyne & Son*	do	370 00

* Contract awarded.

is made by the Bureau of Provisions and Clothing for and in behalf Department, during the fiscal year ending June 30, 1879.

Date.	Articles contracted for.	Price.	Where to be delivered.
1878.			
July 1	Fresh beef.....per lb	\$0 07	Pensacola, Fla.
July 1	Vegetables.....do	03	Do.
July 6	Fresh bread.....do	04½	Mare Island, Cal.
July 6	Fresh beef.....do	08	Do.
July 6	Vegetables.....do	03½	Do.
July 6	Navy bread.....do	03½	Do.
July 8	Navy bread.....do	07	Key West, Fla.
July 29	Fresh beef.....do	11	Do.
July 29	Vegetables.....do	05	Do.
Aug. 24	Pickles.....do	06½	New York, N. Y.
Sept. 9	Butter, 800 lbs. in 1-lb. tins.....do	28½	Do.
Sept. 9	Butter, 3,200 lbs. in 2-lb. tins.....do	27½	Do.
Sept. 9	Butter, 400 lbs. in 1 lb. tins.....do	28½	Boston, Mass.
Sept. 9	Butter, 1,600 lbs. in 2-lb tins.....do	27½	Do.
Sept. 18	Tobacco, 60,000 lbs.....do	48½	New York, N. Y.
Sept. 19	Boys' undershirts, 500.....each	1 44	Do.
Sept. 23	Woolen socks, 500 pairs.....per pair	31½	Do.
Sept. 26	Working suits, 3,000.....each	1 22	Do.
Oct. 4	Men's flannel drawers, 5,000.....per pair	1 48	Do.
Oct. 4	Boys' flannel drawers, 500.....do	1 34	Do.
Oct. 7	Barnsley sheeting, 5,000 yds.....per yard	68½	Do.
Dec. 24	Thin blue flannel, 10,000 yds.....do	32½	Do.
Dec. 26	Butter, 460 lbs. in 3-lb. tins.....per lb	31	Boston, Mass.
Dec. 26	Butter, 2,020 lbs. in 7-lb. tins.....do	30	Do.
Dec. 26	Butter, 1,056 lbs. in 3-lb. tins.....do	31	New York, N. Y.
Dec. 26	Butter, 4,944 lbs. in 7 lb. tins.....do	30	Do.
Dec. 26	Butter, 864 lbs. in 3 lb. tins.....do	31	Norfolk, Va.
Dec. 26	Butter, 4,136 lbs. in 7-lb tins.....do	30	Do.
1879.			
Jan. 6	Pickles, 20,000 lbs.....do	07	Do.
Jan. 8	Evaporated apples, 10,000 lbs.....do	16	Do.
Jan. 10	Beans, 10,000 gals.....per gal	18½	New York, N. Y.
Jan. 11	Beef, 500 bbls.....per bbl	13 67	Do.
Jan. 11	Pork, 500 bbls.....do	10 47	Do.
Jan. 11	Vinegar, 3,000 gals.....per gal	19½	Do.
Jan. 11	Beans, 7,000 gals.....do	21½	Norfolk, Va.
Jan. 11	Vinegar, 3,000 gals.....do	20½	Do.
Jan. 11	Sugar, 50,000 lbs.....per lb	07½	Do.

7.—Statement of contracts made by the Bureau of Provisions and Clothing, &c.—Continued.

Name.	Date.	Articles contracted for.	Price.	Where to be delivered.
H. K. & F. B. Thurber & Co.	1878. Jan. 12	Rice, 20,000 lbs.....per lb.	\$0 07 ¹¹ / ₁₆	New York, N. Y.
Do.....	Jan. 12	Molasses, 2,000 gals.....per gal.	33	Do.
Do.....	Jan. 12	Rice, 15,000 lbs.....per lb.	07 ¹¹ / ₁₆	Norfolk, Va.
Do.....	Jan. 12	Molasses, 3,000 gals.....per gal.	34	Do.
R. M. Masterton.....	Jan. 13	Coffee, 60,000 lbs.....per lb.	15 ¹¹ / ₁₆	New York, N. Y.
W. K. Lewis & Bros.....	Jan. 15	Preserved beef, 100,000 lbs.....do..	11 ¹¹ / ₁₆	Do.
Libby, McNeill & Libby.....	Feb. 17	Compressed corned beef, 10,000 lbs.do..	13 ¹¹ / ₁₆	Do.
B. Y. Pippey.....	Feb. 24	Mattresses, 2,000.....each.	4 22	Do.
P. H. Mayo & Bro.....	Mar. 18	Tobacco, 20,000 lbs.....per lb.	48 ¹¹ / ₁₆	Do.
Simpson, McIntire & Co	May 14	Butter, 10,000 lbs. in 7-lb. tins.....do..	28	Do.
John Hanley.....	May 22	Fresh beef.....do..	11 ¹¹ / ₁₆	Do.
Do.....	May 22	Vegetables.....do..	02 ¹¹ / ₁₆	Do.
J. McNamara.....	May 22	Fresh bread.....do..	06	Do.
C. T. Goodwin & Sons.....	May 23	Baking bread.....per bbl. of flour.	94 ¹¹ / ₁₆	Do.
James Reid & Co.....	May 29	Baking bread.....do..	1 23	Norfolk, Va.
S. Westheimer.....	May 29	Fresh beef.....per lb.	05 ¹¹ / ₁₆	Do.
Do.....	May 29	Vegetables.....do..	01 ¹¹ / ₁₆	Do.
William Clark.....	May 30	Fresh water.....per 100 gals.	14 ¹¹ / ₁₆	Do.
Do.....	May 30	Fresh water.....do..	20	Hampton Roads, Va.
I. S. Ivins & Son.....	June 3	Baking bread.....per bbl. of flour.	1 44	League Island, Pa.
C. F. Austin & Co.....	June 4	Baking bread.....do..	1 75	Boston, Mass.
Do.....	June 4	Fresh bread.....per lb.	06	Do.
Snow & Higgins.....	June 4	Fresh beef.....do..	10	Do.
Do.....	June 4	Vegetables.....do..	01 ¹¹ / ₁₆	Do.
James Murphy.....	June 7	Fresh beef.....do..	06 ¹¹ / ₁₆	Pensacola, Fla.
Do.....	June 7	Vegetables.....do..	02 ¹¹ / ₁₆	Do.
Moses White.....	June 7	Fresh bread.....do..	07	Do.
J. O'Neal.....	June 7	Navy bread.....do..	05	Do.
L. S. Boraeff.....	June 9	Fresh bread.....do..	04 ¹¹ / ₁₆	League Island, Pa.
J. Corney.....	June 9	Fresh beef.....do..	09 ¹¹ / ₁₆	Do.
Do.....	June 9	Vegetables.....do..	03	Do.
George Seitz & Son.....	June 11	Fresh bread.....do..	03 ¹¹ / ₁₆	Washington, D. C.
J. D. Mason & Co.....	June 12	Baking bread.....per bbl. of flour.	1 09	Do.
Kimberly Brothers.....	June 14	Fresh bread.....per lb.	03 ¹¹ / ₁₆	Norfolk, Va.
J. F. Tobin.....	June 14	Fresh beef.....do..	07 ¹¹ / ₁₆	Mare Island, Cal.
Do.....	June 14	Vegetables.....do..	03 ¹¹ / ₁₆	Do.
C. L. Brown.....	June 14	Fresh beef.....do..	06 ¹¹ / ₁₆	Portsmouth, N. H.
Do.....	June 14	Vegetables.....do..	01 ¹¹ / ₁₆	Do.
Do.....	June 14	Fresh bread.....do..	06	Do.
John Faust.....	June 16	Fresh bread.....do..	03 ¹¹ / ₁₆	Mare Island, Cal.
Benjamin Burr.....	June 19	Fresh beef.....do..	14	Port Royal, S. C.
Do.....	June 19	Vegetables.....do..	03	Do.
George W. Maslin.....	June 19	Navy bread.....do..	07	Key West, Fla.
M. H. Homiller.....	June 19	Fresh beef.....do..	03 ¹¹ / ₁₆	Washington, D. C.
Do.....	June 19	Vegetables.....do..	01 ¹¹ / ₁₆	Do.
James Odell.....	June 19	Fresh bread.....do..	06 ¹¹ / ₁₆	Port Royal, S. C.
J. C. Mayo.....	June 21	Fresh water.....per gal.	01 ¹¹ / ₁₆	Do.
J. W. Jones.....	June 25	Preserved beef, 100,000 lbs.....per lb.	15	New York, N. Y.
C. W. Spicer.....	June 28	Tobacco, 60,000 lbs.....do..	38 ¹¹ / ₁₆	Do.
Simpson, McIntire & Co	June 28	Butter, 15,000 lbs. in 3-lb. tins.....do..	30	Do.

NOTE.—Fresh beef and vegetables, bread, and water to be delivered during the fiscal year in quantities as required.

No. 8.—BUREAU OF STEAM-ENGINEERING.

NAVY DEPARTMENT,
BUREAU OF STEAM-ENGINEERING,
Washington, November 10, 1879.

SIR: In obedience to your order, I have the honor to submit to the Department the annual report of this bureau.

By act of Congress approved May 4, 1878, there was appropriated to the Bureau of Steam-Engineering for the fiscal year ending June 30, 1879, \$800,000, which amount has been expended as follows, viz:

for in navy-yards and stations in constructing new engines, boilers, and for dependencies, repairing old boilers, machinery, &c., and fitting vessels for sea-service, purchase and preservation of tools, handling and preservation of materials and stores.....	\$539,730 00
purchase of materials, stores, &c., freights, and incidental expenses (of which \$30,728.28 was for coal for shops at the navy-yards under cognizance of Bureau of Steam-Engineering for use during the fiscal year)...	220,302 92
repayments made on foreign stations for repairs, materials, &c.....	21,100 11

Total.....	781,192 33
repayments by transfers in adjustments of appropriations.....	2,017 98

Total actual expenditures.....	779,174 44
balance on hand.....	20,825 56

Total amount appropriated for 1878-'79.....	800,000 00
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The balance of \$20,825.56, however, is covered by obligations of the bureau for purchases, &c., at home and abroad, the vouchers for which have not yet been received.

The following amounts have been paid from the "deficiency appropriation" act, dated June 14, 1878, in addition to amounts exhibited in the last annual report, viz:

Labri & Chauncey and others, for whom J. D. Harburt & Son were ship-brokers.....	\$3,050 50
Wright and Whitney Company.....	21,465 11
Farlan and Hollingsworth Company.....	10,000 00
John Roach.....	70,282 00

Total.....	104,797 61
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There yet remain to be paid from the above appropriation, for work not yet completed, or accounts not yet settled, the following sums, viz:

Farlan and Hollingsworth Company.....	\$12,881 00
William Cramp & Sons.....	22,850 00
John Roach.....	14,007 00

Total to be paid.....	49,738 00
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The following amounts were appropriated in excess of what was found in final settlement of accounts to be due the parties named, and cashed or turned into the Treasury or reappropriated, viz:

Wier & Pinckney.....	\$0 40
Western Railroad Company.....	11 90
Dominion Steamship Company.....	2 30
Philadelphia and New York Steam-Navigation Company.....	2 10
Wright and Whitney Company.....	1,274 70
Standard Iron Works.....	301 00
American Tube Works.....	4,820 50
Deficiency Steam-Engine Company.....	20,325 30

Total.....	26,739 10
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NEW ENGINES, ETC.

Nipsic (3d rate).—New engines of the compound type have been erected in the vessel, connected, and tested under steam. New boilers designed by the bureau, have been built at the navy-yard, Washington, D. C., placed on board, and the following extracts from report of a board of engineer officers shows them to be of a successful type:

* * * The water at no time showed a disposition to foam, which must be accepted as quite satisfactory evidence that under the conditions of the trial the circulation of the water in the boilers was all that could be desired and the steam-rooms dry.

The water in the river during greater part of the trial was very muddy and the tide ran, so much so as to bring the bottom of the ship (two-thirds of the time) in contact with the accumulated mud near the wharf, and this, from necessity, had to be used more or less mixed with the feed-water.

The water-valves for relieving cylinders of water usually carried over by foaming or other causes, did not have to be used during the trial, which is another evidence that the boilers did not prime or lift the water.

The boilers were perfectly tight before, during, and after the trial, and their position, with arrangement in the ship, affords excellent opportunities for repairs; in fact every part of the boilers, fronts, backs, and sides, are accessible, and the whole is a complete success. * * *

Experience having shown the unreliability of the single-furnace boiler constructed and proportioned heretofore in the naval service, a different type of boiler, designed by the bureau, having two furnaces in each, was built at the navy-yard, Washington, D. C., and placed on board the *Nipsic*.

Particular attention has been paid in these boilers to accessibility and interior for examination, cleaning, and repair.

Galena (3d rate).—New engines of the compound type and new boilers designed by the bureau, have been completed and are now being erected on the vessel at the navy-yard, Norfolk, Va. The ship will be ready for service, in the engineer department, by the latter part of December. The new boilers of this vessel were originally designed with a single furnace, but experience having shown that their proportions and arrangements were faulty, a change was made in the type by substituting two furnaces and otherwise modifying them so that they are similar to those adopted for the *Nipsic*.

Mohican (3d rate).—New engines of the compound type and new boilers of the type adopted for the *Nipsic*, designed by the bureau, are being forwarded to completion and will be ready for service by the time the ship is prepared to receive them.

Monadnock (3d rate).—New boilers, designed by the bureau, have been completed, shipped to California, and stored in the navy-yard, Mare Island.

THE DOUBLE-TURRETED MONITORS.

In connection with these iron-clads I would respectfully renew the commendations made under date of February 13, 1879, as follows:

* * * It will require from eighteen months to two years to build, and erect on board, complete and ready for steaming, the motive power of these vessels, while but a few months will be called for, in case of emergency, to put on board the turrets and guns, and to supply the armature. If the machinery was completed, the vessels could be steamed to the navy-yard nearest the point of their construction, and placed under our care and control, ready, in the engineer department, for immediate service.

I would, therefore, in view of what I have stated in the foregoing, recommend that

In this connection I would respectfully recommend an appropriation of \$25,000 for the purchase of tools and machinery in the following named yards, to be divided as shown:

Asacola navy-yard	\$10,000
Rosfolk navy-yard	10,000
Fort Island navy-yard	5,000
Total	25,000

WORK REQUIRED.

The following will exhibit the character and extent of the work necessary to be carried out on the vessels enumerated, during the fiscal year 80-'81, under the cognizance of this bureau:

Adams.—General repairs.

Alliance.—General repairs.

Ashuelot.—General repairs; work in progress on China station.

Brooklyn.—General repairs. New boilers placed and connected. New four-bladed screw propeller of bureau design.

Canandaigua.—Repairs to be completed.

Despatch.—To be supplied with new boilers, and engines to be thoroughly overhauled.

Hartford.—Extensive repairs. New boilers placed and connected. New four-bladed screw propeller of bureau design.

Iroquois.—Extensive repairs to engines. New boilers of bureau design to be constructed.

Juniata.—Thorough repairs. New boilers already completed to be placed in the ship. New four-bladed screw propeller of bureau design and new crank-shaft.

Lancaster.—Work has been commenced, taking out old engines and boilers, and erecting on board, new 60 by 36 inch engines, with new boilers which are on hand.

Michigan.—General repairs. Should have new boilers.

Monocacy.—General repairs.

Monongahela.—Thorough repairs to engines. New boilers to be constructed from bureau design. Ship out of commission.

Ossipee.—Extensive repairs to engines. New boilers to be constructed from bureau design.

Plymouth.—General overhauling and repairs.

Tallapoosa.—Needs new boilers.

Tuscarora.—Extensive repairs to engines. New boilers to be constructed of bureau design.

Yantic.—New boilers already completed and placed in the ship. New four-bladed screw propeller of bureau design has been fitted, and the engines are being thoroughly overhauled.

EXPERIMENTAL INVESTIGATIONS.

The board of experienced engineer officers, in session at the navy-yard New York, and of which Chief Engineer B. F. Isherwood, U. S. N., is president, continue experimentation upon such subjects as are submitted by the department, and the reports made from time to time are of the highest degree interesting and valuable alike to the naval service and to the general public.

With a view of increased efficiency and economy in boiler construction and for the purpose of demonstrating by exhaustive experiments the best forms and proportions in staying and bracing of boilers, a board

was convened at the navy-yard, Washington, for this purpose. The board consisted of Chief Engineer James P. Sprague, U. S. N., and Passed Assistant Engineer George E. Tower, U. S. N., and performed the duty assigned in the most thorough manner, reflecting great credit upon themselves and upon the service.

The results of these researches in the strength and distribution of material in boiler construction are embodied in Appendices A and B.

PERSONNEL OF THE ENGINEER CORPS.

The number of vacancies in the grade of assistant engineer is still quite large, but under the operation of existing law, and by reason of the high standard of qualification for entry at the Naval Academy, a large percentage of annual graduates is insured, and the existing vacancies will be filled from this source alone.

The present system of competitive examination for entry at the Naval Academy brings into the Engineer Corps the best talent, and as their numbers augment, their influence, tending to increase the efficiency of the Navy, will be more manifest with every succeeding class.

In this connection I will repeat what has been already said as to the advisability of abolishing the rate of machinist in the Navy; it is a worse than useless expenditure of public money to maintain a rate at a large compensation (if we take into account the character of talent usual with that class) for the performance of duties properly devolving upon a commissioned officer, and which should be carried on by him, and not by an irresponsible, and oftentimes ignorant, enlisted man.

"* * * As a measure of economy to the government, the machinist system should be abolished at once, inasmuch as through their ignorance and carelessness the Bureau of Steam Engineering has been involved in expenditures for repairs amounting to many thousands of dollars." * * *

"* * * In another direction the interests of economy can be subserved by the abolition of machinists, viz: They number not far from 60, which, at a pay of \$900, represents an annual expenditure of \$54,000; and as they are included in the complement of men allowed by law for the Navy, they cripple its efficiency, in personnel, by a force not sufficient to man a vessel of the Yantic class; besides which, the duties assigned them can be performed, as they should be, by the Passed Assistant, Assistant, and cadet engineers of the Navy."

"* * * As an economical and efficient substitute for the present expensive and unnecessary machinist system, I respectfully suggest the following: Let there be enlisted for every ship, when commissioned, whether large or small, and as a part of her complement of the engineer force, one blacksmith, one boiler-maker, and two finishers. All to be given the rate of 'engine-room artisan,' with a uniform pay of \$50 per month, and the usual rations. The change here suggested will insure a saving in money to the government of \$45,000 per annum, and an increase in the personnel of the Navy of about 150 men, as above stated." * * *

APPRENTICE BOYS, ENGINEER DEPARTMENT.

Under the provisions of section 1518 of the Revised Statutes, boys between the ages of fifteen and eighteen years may be enlisted to serve the Navy until they arrive at the age of twenty-one years.

Boys displaying some aptitude for mechanical pursuits and otherwise

PAPERS ACCOMPANYING THE

acted upon their own application for instruction in the
here they receive instruction in the coaling and work
construction and operation of boilers, the salinometer
gauges, &c.

received from the various ships upon which these boys
the engineer force they seem to give general satisfaction
opinion that it is to this system that we must look for
to make efficient and intelligent substitutes for the
enlistments. The number detailed for the engineer de
as yet, fixed by law or regulation, and at the present
at twenty under instruction on the training-ship Min
at an equal number afloat in the various squadrons.
I recommend that the system here inaugurated for fireme
permanently organized by such legislation as may be
this means the rate of engine-room artisan recommended
measure by men thoroughly competent to perform a
maintaining to the rate; and this affords an additional argu
ment in favor of the machinist system as being unnecessary
superfluous.

PENSIONS FOR DISABLED MECHANICS.

class of men deserving of the consideration of the go
I respectfully recommend that such provision be made
of Congress may seem advisable to meet the needs
of public servants; and beg to refer in this connection
my report.

ESTIMATES.

or to submit herewith the annual estimates of this bu
for the year ending June 30, 1881.
Respectfully,

W. H. SHOCK,
Chief of Bureau.

THOMPSON,
Secretary of the Navy.

BUREAU OF MEDICINE AND SURGERY.

NAVY DEPARTMENT,
BUREAU OF MEDICINE AND SURGERY,
October 31, 1879

In response to your order of the 3d instant, I have the honor
to forward the annual report of the Bureau of Medicine and Surgery,
with a statistical exhibit of the diseases and casualties occurring
during the year 1878, and estimates for the support of the
Department for the fiscal year ending June 30, 1881.
I regret that the health of the officers and men displays
no improvement since the last report, but it is hoped that the active
efforts of the Department, now being exerted, supplemented by the
cooperation of officers of all grades in improving the sanitation
of the service, will, in the near future, result in such success as to greatly
reduce the mortality rate.
The progress of sanitary science for years that no efficient

and practical plans had been devised to prevent, or even to ameliorate the terrific suffering of early mariners, and even when science finally furnished correct data for this purpose, the supineness of officials or administrative customs furnished a barrier to their realization. It was under these circumstances, national enterprises, both military and commercial, often failed of accomplishment, or were imperiled by reason of loss of life and health of officers and crews, and fleets from remediable causes. History narrates the memorable contests of the continental powers for empire and foreign conquest, during the seventeenth and eighteenth centuries; and later, the experiences of our own Navy and Army contribute their quota of death and suffering to swell the list of victims to ignorance of sanitary laws and bad naval conveniences. The early navigators were bad water, bad food, and pernicious air, arising either from over-crowding, bad ventilation, or imperfect construction, whereby chips and other floating materials were sealed up in the spaces between the planks, and undergo putrefactive changes, without any possibility of being washed out through properly constructed drains. The miasmas mingled with the leakages of molasses, vinegar, and other materials of organic origin, formed an admirable medium for the development of morbid exhalations and foci of contagion. The influence of all these various causes on the health among seamen was, for a long time, not fully

appreciated. It was not until that good food and water were the chief essentials of voyages: that as long as the stomach was catered to, they cared little about the quality of the material with which they were supplied. This erroneous notion of the importance of abundant air has cost nations thousands of lives and millions of dollars. Science has not labored in vain in later times in teaching the fact that pure air is triune with pure food and pure water, the basis of healthy and vigorous life. The broader mental culture and interests in such studies, now prevalent among officers, are tending to disseminate more correct views in these particulars. The thought is pressed to run in these channels now that the officer is to be regarded as more valuable to the nation, and the public expects those to whom it entrusts the control of the destinies of the citizens, to familiarize themselves with the health laws and the usefulness and efficiency depend. The progress of the last half century has brought about the amelioration of the hardships of human life the sailor no longer floats on the ocean the toy of the elements; he enables him to control the situation perfectly; by its power he steers his course when favorable winds and tides fail to assist him, and at the same time it furnishes a perennial supply of pure water. The coarse monotonous food, saturated with salt, and by months of stowage, has given way to wholesome food, including vegetables, which have not only banished scurvy and other diseases from the list of nautical horrors, but also placed within the reach of the sea-farer means of even luxurious living. These are the progress in these directions, and now inquiry is busy to find means for ventilation, to vouchsafe more air and light to the nautical habitations.

It has not yet arrived that we may control the hygienic conditions of the aquatic as we do those of the terrestrial abodes. The difficulty arises from the differences in the nature of the

h, 1878, ordered a board composed of intelligent branches of the service "to examine into the method of ventilation, mechanical or otherwise, by which the ship might be more perfectly ventilated"; the subject was referred to the board, and the result of their deliberation was a plan now in use on board the United States steamer of the Asiatic squadron. The method which is shown in the diagram is based on the aspirator plan, by which the air reaching every part of the ship, and term- ing where the currents are drawn by a steam pump, the entirety of air within the ship; or the current of air driven into the interior. This latter method is in disinfecting, by means of chemical substances, or by superheated steam. The success of this method is shown by the favorable reports contained in private reports, which embrace atmospheric examinations made on board so few to authorize comparison with similar ships not provided with the ventilator. The appended exhibits a summary of the observations made.

It is, however, in this connection that the demonstration of the system of ventilation by physical observation is full of difficulties. The dangerous element of the system is the organic exhalations of the lungs and the sweat, and no ready, easy, and reliable means of removing them has been assumed that, as this organic matter is at the same time products of the same vital process, the latter in the air may be regarded as a dangerous assumption would, perhaps, be unobjectionable. It is a grave error to suppose that grave errors may creep into the calculations of the accidental presence of this agent in the air from the methods may be lacking in uniformity. The important question has been referred to competent authorities for opinion. I am strongly impressed, however, that the United States steamer Richmond is a complete success, and this belief is strengthened by the reports of the sailors, who live below decks, and have judged of the character of their sensations while the weather was so hot and sultry.

It is not expensive when its efficiency is considered. It requires a great deal of alteration in a finished ship, a number of pipes in proper position; for instance, on board the United States steamer Richmond, the cost was \$10,000. It is, however, an admitted fact, that the progress towards the improvement of the health and prevention of disease in communities is true, and the amount of mortality might seem large. This fact has been in the Navy by diminished sick-lists, fewer deaths, and lessened pension-roll, as the sanitary arrangements have been improved, and his food, water, and the standard of quantity and quality.

It is a measure of the highest wisdom to introduce the system on new ships, and into all the old ones when

necessity for pure air is so urgent on ship-

l the subjects of the investigation of their origin and discovery of the best means of counteracting and controlling the importance of national questions, to be worked out on auspicious. Successful and reliable means of disinfection would be an immense gain both to the Navy and to the land, and would protect communities from the importation and destroy in a few months valuable lives, and cause the death of many. For the above-stated purpose, the establishment of a station on the Northern coast would be desirable, where vessels from all parts of the world might resort, the officers and crew transferred to buildings on shore, the sick properly cared for, while the vessel could dismantle the vessel and thoroughly cleanse it. In this manner, in a few days, the vessel would be without any fear being entertained of a recurrence of the disease. The station would thus be serving the necessities of the Navy. Experimentation on the subject of disinfection might be conducted by the medical officers of the Navy, who are so well calculated by their experience and abilities for this work. I am convinced that the information and experience thus obtained would soon outweigh the outlay incurred in establishing the station, and I solicit your active exertions in securing an appropriation for this purpose. I estimate the cost of the ground, the erection of buildings, and the purchase of machinery and disinfectants to

HOSPITALS.

The hospital at Norfolk, Va., is now being put in good repair. The hurricane which prevailed in that vicinity last August damaged the buildings and grounds to such an extent as to require the expenditure of \$3,999. This institution is now being furnished with a steam-heating apparatus, which, when complete, will supply a long-needed improvement, and at the same time elevate it to the rank of one of the best equipped hospitals in the country.

The hospital at Annapolis has been abandoned, as the building used for quartering the sick inside the walls of the Academy affords abundant space for all its wants, and it would only be on occasions of epidemic disease that any greater hospital accommodation would be necessary, and this necessity could be easily met in such cases by the erection of temporary structures. A considerable expense is incurred every year in caring for the building and grounds, and the former is gradually falling into decay with disuse, so that, in my opinion, the interests of the government would be best served by disposing of it and turning the proceeds over to the hospital fund, the resources of which are now strained to provide for hospitals actually needed.

The hospital at Mare Island, California, has been by judicious expenditure kept up to that standard of efficiency which the growing necessities of that station absolutely demand. The available space for accommodating any material increase of the number of patients is, however, greatly restricted by the medical officers being quartered in the building; a state of affairs which should not exist. I would, therefore, earnestly call your attention to the pressing necessity that exists of putting up quarters for the medical staff in the hospital grounds. Suitable buildings could be erected for this purpose at a cost of \$15,000.

1878.		For timber.	For sundries.
June 14.	Amount appropriated by Congress to meet a deficiency on account of the fiscal year 1876-'77.	\$416,319 32	\$931,134 55
	Expended:		
	From June 15, '78, to June 30, '78.	\$261,801 09	
	From July 1, '78, to June 30, '79...	101,394 96	
			363,196 05
	From June 15, '78, to June 30, '78.	\$673,885 86	
	From July 1, '78, to June 30, '79...	50,424 92	
			724,310 78
	Balance on hand July 1, 1879.....	53,123 27	206,823 77

Vessels on which work in repairing or completion was done during the fiscal year 1878-'79.

Colorado.	Tuscarora.	Montauk.
Franklin.	Vandalia.	Nahant.
Minnesota.	Wachusett.	Passaic.
Wabash.	Wyoming.	Saugus.
Alaska.	Yantic.	Wyandotte.
Antietam.	Tallapoosa.	Alarm.
Canandaigua.	New Hampshire.	Catalpa.
Lancaster.	Constellation.	Cohasset.
Lackawanna.	Constitution.	Emerald.
Plymouth.	Independence.	Fortune.
Powhatan.	Dale.	Jean Sands.
Pensacola.	Jamestown.	Leyden.
Richmond.	Portsmouth.	Mahopac.
Shenandoah.	Saratoga.	Mayflower.
Tennessee.	Saint Louis.	Monterey.
Ticonderoga.	Guard.	Pilgrim.
Alert.	Ajax.	Pinta.
Enterprise.	Canonicus.	Rescue.
Galena.	Camanche.	Rose.
Iroquois.	Catskill.	Snowdrop.
Juniata.	Jason.	Speedwell.
Kearsarge.	Lehigh.	Standish.
Marion.	Manhattan.	Triana.
Nipsic.	Miantonomoh.	Amphitrite.
Quinnebaug.	Monadnock.	Terror.
Swatara.		

The bureau has been employed in the past, as in the preceding year, in repairing such of our ships as were most needed and the appropriation would admit of. We are still pursuing this course, and before the close of the next fiscal year the vessels comprising our squadrons will be in as an efficient condition as they are capable of being made. Some of the ships built or rebuilt within the last six years, such as the Trenton, Quinnebaug and class, Adams and class, have proved to be fast sailers and good sea boats, and are spoken of by their commanding officers, after full trial, in the highest terms.

Lacking authority, as well as money, to build new vessels, none have been commenced since those authorized by act of Congress approved March 3, 1873. We have, therefore, not kept pace with other maritime powers in the construction of vessels of war, and, with the exception of the vessels above alluded to, our Navy is composed, to a large extent, of ships of a by-gone age; and it is hoped the day is not far distant when the necessity of having a modern navy will be recognized, and that appropriations will be made to enable us at least to commence the building of ships of modern type. Some of the plans of vessels called for by the bureau on the 16th day of February, 1878, have been forwarded; others are still in the hands of the constructors; and as there is no appropriation to commence building, the plans have not been called in, as

additions to the corps of naval constructors for order that the corps may be kept in an efficient condition, I recommend the appointment of four assistants to be selected after a competitive examination. Navies have been selected generally from those who rely entirely upon themselves for the attainment of their profession. As members of some other corps are from youth under the fostering care of the Government, I deem that the education of men theoretically and practically in the exceedingly important business of designing, building, and repairing ships should receive the attention which its importance can probably best be met by the establishment of a school of naval architecture. And I respectfully ask attention to the honor to suggest in my report of October, 1879, that the Secretary of the Navy should receive the attention which its importance can probably best be met by the establishment of a school of naval architecture. And I respectfully ask attention to the honor to suggest in my report of October, 1879, that the Secretary of the Navy should receive the attention which its importance can probably best be met by the establishment of a school of naval architecture.

J. W. EASBY,
Chief of Bureau.

N,
of the Navy.

11.—MARINE CORPS.

HEADQUARTERS MARINE CORPS,
COMMANDANT'S OFFICE,
Washington, D. C., October 18, 1879.

In submitting my annual report for the past year, 1879, there were 1,979 enlisted men in the Marine Corps, 975 are on board ships in commission, and 1,000 are on shore stations.

In addition of two years past for an increase in the number of enlisted men.

Returned from a tour of inspection, I am happy to report that the officers and enlisted men at the different posts were making a very creditable military appearance. The Marine Barracks at Portsmouth, N. H.; Boston, Mass.; Brooklyn, N. Y.; and San Francisco, Cal., barracks, which will make them more comfortable.

Antietam has been altered into very commodious quarters for the enlisted men, and will answer all purposes for the Marine Corps. Due to the naval constructor at that station (Mr. M.) excellent plans prepared by him, and the energy of the work on the ship to prepare her in time for service have been made at Norfolk, Va., or at the navy yard, for lack of appropriations.

The Wyandank, long used for guard and mess purposes, have been transferred to a shed on the wharf at the navy yard, and are now available.

In building for officers anywhere, no appropriation has been made.

In the present year the number of officers will probably be increased by law. I renew my recommendation for the future appointments, and in view of the increase in the number of officers, and in view of the importance of the Marine Corps, trust that the proper recommendation to Congress.

by the act approved June 23, 1879. The amount for the pay of officers has been reduced \$7,685, showing a total decrease of \$2,685 below the total amount appropriated for the current fiscal year.

I am, very respectfully, yours, &c.,

GREEN CLAY GOODLOE,
Major and Paymaster Marine Corps

Col. CHARLES G. MCCAWLEY,
Commandant United States Marine Corps, Headquarters.

No. 12.—SURVEY OF THE AMAZON.

REPORT OF COMMANDER THOMAS O. SELFRIDGE.

UNITED STATES SHIP ENTERPRISE (3d rate),
August 1, 1879

SIR: I have the honor to submit the following report of the survey of the Amazon and the Madeira Rivers by the United States ship Enterprise, under my command.

The Empire of Brazil includes an area variously estimated from 2,500,000 to 4,000,000 square miles, probably nearly one-half of the whole continent of South America. Lying almost wholly in the tropics, the great watershed of the Andes passes through its territories, giving it the most perfect water system of any country in the world.

Thus it would seem that nature has prepared a way for the opening up of this vast country by the most inexpensive of all systems of transportation, but in the development of which, up to the present time, little progress has been made.

The headwaters of the Parana River, flowing south on its west boundary, almost meets the Madeira, which empties to the north in the Amazon. The latter, flowing nearly east, embraces with its great tributaries the Xingu, Tapajoz, Madeira, and Negro Rivers, a belt of territory comprised within twenty degrees of longitude and fifteen degrees of latitude, and over a million square miles can be reached by the great stream and its arteries. The larger part of this vast area is unknown country, and shielded within its limits rove tribes of wild Indians, who, taught by the experience of the past, shun all communication with the whites. From what the few explorers have gleaned and the records left by the early missionaries, the greater portion of this country south of the Amazon is a magnificent table-land, abounding in pastures, which could support countless herds of cattle, covered with splendid forests of the choicest woods and most valuable drugs.

The coast range of Brazil, Sierra Borborema, running north and south at an average distance of 300 miles from the Atlantic Ocean, is the limit of the present portion of the empire devoted to agriculture, except narrow strips along the margin of the Amazon and Parana Rivers. Between this range and the Andes lies this great territory, watered by innumerable rivers, which finally mingle their streams with the mighty Amazon. But a barrier in the form of a range of hills extends from the boundaries of Peru to the Atlantic coast range, and breaks up the navigation of the four principal southern branches of the Amazon, viz., Tocantins, Xingu, Tapajoz, and Madeira Rivers, into most formidable

rapids or cachuelas. These are formed only 250 miles from the mouth of the Tocantins, and about 500 miles up the Madeira. But for such obstacles, the introduction of steam in 1853 on the Amazon would have brought us into closer communication with these rivers. * * *

Steam was first introduced on the Amazon in 1853, and at once new life seemed to be given to the country. It was something compared with the growth of the past, but soon reaching a limit, because dependent upon the productions of the forest gathered by a scattered population with no inducements for emigration.

The population of Brazil is confined in a great measure to the coast and engaged in the cultivation of coffee and sugar. The Paraguayan war was a great drain upon its resources, and the expense of which had to be met by severe taxation. The general government collects duties upon all imports, as well as an export tax. Besides, every province supports itself not by internal taxation, but by imports levied upon all its imports and exports. * * *

The country bordering on the Amazon, as well as the lower portions of its tributaries, being subject to overflow, is not healthy, and the soil is light and sandy. It will grow plantains and mandioca, but has not sufficient depth or richness for the more exhausting crops of sugar, coffee, and tobacco.

No nation is more directly interested in the prosperity of Brazil than ourselves. Our geographical situation brings us nearer than Europe to her coffee, sugar, and raw products of the forest we need in exchange for the manufactures and food we can furnish to her agricultural population. * * *

RIVER AMAZON.

The portion of this great river which flows through Brazil is the portion with which this report is particularly connected.

From Tabatinga, the frontier post or town of Peru, to the Atlantic, it flows in all its majesty for 2,000 miles, receiving as its great tributaries from the south, the Xingu, Tapajos, Madeira, Purus, and Javary Rivers, and from the north, the Negro. In its whole course it drains but two provinces of the Empire of Brazil, those of Grão Pará and Amazonas—the former embracing 532,000 square miles, the latter 550,000, or a total area twenty times that of the State of New York. It is sparsely inhabited, Grão Pará not numbering over 120,000 and Amazonas about 40,000 inhabitants, by the census of 1875, these figures including everywhere but Indians, or about one inhabitant for every 72 square miles. Up to the introduction of steam on the Amazon, in 1854, communication between Pará and the province of Amazonas, and was made only by sailing-vessels, which consumed about six months

to be made about a great improvement, for since 1860 the river has been navigated; but they are still insignificant, considering the vastness of the river, as the following table, giving the exports from Belém, and from Soopa, the other port of entry of the river into Brazil. There are at present two large companies that control the navigation of the Amazon River and its tributaries. The Companhia do Amazonas, limited, who have enjoyed a monopoly of the navigation, and a subsidy of about \$500,000 a year from the government, are also in receipt of a tax of 3 per cent. upon all exports from the province of Amazonas, in return for which the

and in Peru as the Marañon. Either of its arms, the Ucayali or the Huallaga might lay claim to the title of river, but at Nauta the junction of the two, it becomes then immeasurably and infinitely larger. As far as the junction of the Rio Negro of battle ship at all seasons of the year. About 10 miles below the Negro where a station on which it is said there is found but 18 feet of water, but I doubt the accuracy of it, for at the same place here was a depth of 36 feet.

The Amazon proper about the middle of May, commences its title before the middle of July. The temperature during July and August, above Marituba is about 84°; below, 84° with no change during the day. The difference in feet is about the difference between high and low of the Madeira, while at Tabatinga it is as at Belém in place in October after which a rise in the river takes place a fluctuation, there being a rise and fall in January, when the spring rise commences,

about the 1st of June, earlier than at Para, where it commences around. This is the season of the breezes, the E. blows strong during the day as far up as Belém. During August and September, there is much lightning and thunder from the eastward.

As in November, and continues through the month of December, but during this period the rains are far less frequent, interspersed with a great deal of fine weather. The temperature is between 78° Fah. in the wet, and 88° in the dry, but is oppressively warm, but are rendered disagreeable by the swarms of mosquitoes. There is no relief from the heat in the middle of the river, for the sun is always hot and becomes alive with them.

The difference in the reports of the altitudes of the stations on the Amazon. Probably none have had a standard barometer. The diurnal fluctuation would represent several feet without a base of reference for barometrical readings, but be inaccurate.

The difference between the height of the station of observation and one at Para, to the recording station, was sent to Mr. Andrew Cahn, United States consul at Para, and he had it to be hung in his house and volun-
teer readings.

The Amazon, at the mouth of the Madeira, is about 84.8 feet. The distance between these two stations would give a rise a little less than an inch to the rate for all points from the sea to the mouth of the Amazon obtained by our observations.

The Amazon, so far from flourishing, appears languishing from the empty houses on the banks and the entire absence of all enterprise or business.

The province of Amazonas, is, however, a fertile and the distributing point for all the territory of the Empire. The indications are that it is a rich and we have as the principal villages Belém, Santarém, Obidos, Villa Bella, Serpa,

the point of astronomical position was taken, which marked the termination of the day's work and commencement of the new.

The value of such a survey as described depends upon the accuracy of the points fixed and the correctness of distance run, and, feeling as to these facts, every safeguard was taken to insure them.

Of course a running survey of this kind would not do where work is needed, but for all practical purposes, for the survey of a river that is annually undergoing important changes, in order to obtain thorough knowledge of its navigability, distances, position of islands and general contour, it is all that is required.

In addition, the points of all islands where shoal water would be found were sounded in the launch, and two daily cross-sections were taken.

For the better accomplishment of our survey the officers were assigned to different duties.

Lieut. Commander S. H. Baker and Lieut. C. P. Perkins were selected on account of their experience in astronomical work, for the very important duty of fixing the several points of the survey. This required their constant attention every evening until near midnight, and the following day would be mostly consumed in bringing up their work. The officers performed the work assigned them with zeal and ability.

To Ensigns Hunt and Peacock was given the duty of keeping the field-book, taking the numerous bearings required, and recording soundings.

Lieutenants Nichols, Blocklinger, Spalding, and Master Wright were in charge as officers of the deck, superintending the handling and steering of the ship, and the soundings.

Lieutenant Blocklinger afterwards had charge of the launch in the survey of the Madeira River. Lieutenant Nichols, assisted by Ensign Hunt, had charge of the running survey by the launch, in connection with our own, from the mouth of the Madeira River to Para. To these officers my thanks are due for the interest they manifested in the work, and for the accuracy and zeal they exhibited in the performance of every duty required of them. Much praise is due to Passed Assistant Surgeon M. L. Rath for his unremitting attention to his duties, and to which I attribute in a great degree the excellent condition of our company during a very arduous period.

COMMENCEMENT OF WORK.

The few preparations necessary, due to a prolonged absence, having been made, the Enterprise sailed from Para at noon of June 30. In this respect I was greatly indebted to Mr. Fred. Pond, at the head of the old establishment of that name, and the only American house in Para. Mr. Pond is a large-hearted American, noted for his deep kindness to any of his countrymen in distress. He gave me every assistance in his power, and in numerous ways facilitated greatly my plans. Such men as Mr. Pond our government would do well to appoint as consuls, for they have an influence for good with the local authorities that a stranger from the United States unacquainted with the language, laws, and customs could be expected to acquire only after a long residence.

The city of Para, or Santa Maria do Belene, is advantageously situated on the Para River, distant about 100 miles from the sea, and about 100 miles from Marajo Bay, a beautiful expanse of water, and of an adequate depth for the convenient working of all classes of vessels. The river

REPORT OF THE S

front of the town is shoal, and
and unload by lighters.

Steamers of the larger class are
known as Forte da Barra. Para
on relatively that New Orleans
about 30,000 inhabitants; the town
with many handsome residences
fact that it is the distributing point
growth has been relative to the
surprise the merchants of Para
any of them, especially the Para
to continue the dependence upon
up a vast credit system, which
ment which necessarily renders the
assistance, in the almost total failure
year, upon which large advances

Some system of wharfage by
quickly is absolutely necessary,
improvements when Brazil was
drained by the Amazon, and en
and development.

The Enterprise steamed rapidly
15 miles wide, as I intended
passage to the Amazon, which
outside and entering the mouth

We anchored for the night at
network of water for
our first experience,
at our pilots were in
difficulty. Just before
was passed, the distance
the appearance of
out, like all the others
n is impeded a few
s.

lay was passed prior
at nightfall we reached the little
shore of Marajo Island, which is

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rough the trees, and the darkness was of that intense blackness that is seen in the solitude of tropical forests. A flash of lightning revealed a long, sinuous-looking object, hanging from a branch over the top-deck. Snake! was cried, and it was not long before that spot was deserted as the forest into which we had been pushed. The storm finally passed, and the bank being steep, the current swept us out again to the stream.

In the morning our apparent snake was seen still hanging from the rough where he was first reported, and proved to be the remnant of a large vine that had been broken when the ship struck the bank. It occasioned a good laugh, and was long treasured among the jokes of the expedition.

The river at Breves was 600 feet wide. We were still within the influence of the tide, which flows as flood for four hours, and then follows eight hours of ebb.

A short distance above Breves we entered a long, narrow passage hardly wide enough for the ship. These narrow lagoons are known as *furos*. There are two leading up from Breves, the Paracachi, which leads in ascending to the Amazon, and the Aturia, in descending. There is no room to pass in them, any vessel not observing this rule would be subject to heavy fine.

We made the passage of the *furo* Paracachi without accident, though it required the most careful steering, and our yards at times almost touched the trees. At the further end there was a sandspit, which forced us to anchor till the tide, which here rises nearly three feet, was at its full, when we passed over without difficulty.

To those unaccustomed to the luxuriance of the tropics, there is something extremely novel and interesting in the passage of the *furos*. To rise up these lagoons, fringed to the water's edge with trees one hundred and thirty feet high, interspersed here and there with numerous members of the palm family, whose long fan-like branches hang down in such graceful attitudes. But the eye wearies at length with the everlasting tree-line that borders the banks of these rivers, and which, like the mighty Amazon, are so blended together that they lose the attractiveness due to the variety of growth that the narrowness of the *furos* permits the eye to dwell upon. I was strongly reminded of my journeings of previous years upon the Atrato, which has pretty much the same flora, and I looked forward with eagerness to our approach to the great Amazon. Another day yet elapsed before we reached the point where the Amazon bifurcates into its two branches, the Maca and Garupa, and it was late at night before we anchored at this point.

I shall never forget the feelings that this mighty river inspired. In the morning we rounded the point where we had anchored, and came out upon the open river rolling down in all its resistless majesty. For miles broad at this point, stretching out to the westward until it was lost in the dim outline of the distant horizon, it seemed hardly possible that this was a river almost dividing a continent.

Can it be possible, the mind asks the question, that nature reproduces herself year after year, and carries back from the ocean, borne in clouds overhead, the vapors that, condensed, yield a supply sufficient for the feeding of this tremendous flow of water, amounting to many millions of cubic feet a minute?

Our ship was kept close to the southern bank to avoid the strength of the current, and we thus had the full flow of the river to our right as we ascended. In the distance to the north the blue Almerine hills formed a pleasant background to this picture of nature's grandeur, particularly

REPORT OF THE SECRETARY OF THE NAVY.

enjoyable, because it was rare on the Amazon to have any break to forest-girt banks.

A good idea of the width of the Amazon is shown in the fact that at this point we took a series of compass deviations by steaming around a circle and observing the runs upon each point of the compass.

In the afternoon of the day we entered the Amazon, June 7, 1878, I happened to speak a schooner that was towing down the river. I was starting ahead a crash was heard in the engine-room, accompanied by an escape of steam up the hatch. As soon as the excitement had subsided it was found that the connecting-rod bolts of the after-engine had broken short off, which let the end of the rod down into the well, where the crank, in making a revolution, had struck and badly bent it.

This accident filled me with apprehension, for the success of the expedition was entirely dependent upon the motive-power of the *Erebus*.

Far away from the mouth of the Madeira, with no means of reaching shore outside of ourselves, at first I was inclined to feel disheartened, but a second thought that we could move along slowly at first with the engine was reassuring.

The accident was caused by water in the cylinder, which the valves failed to carry off. To straighten so large a piece of machinery as our rod was no slight undertaking. But it is an unfortunate state of affairs when the stores of a man-of-war will not furnish expedient repair. Accordingly our little forge was taken forward and placed under the fore hatch, a hearth of bricks built around it, so as to enlarge the area, and the rod hung in chains over it from the carlines of the topmost fore-castle deck; a moderate heat was applied, and a hydraulic ram, operating from the deck overhead, by slow stages, brought it to nearly its original form, sufficiently so, that, practically, it was not fore-saken. It was found, too, that the connecting-rod bolts could be straightened and for end. All this required several days, but in the meanwhile the engines had been disconnected, and the ship proceeded up the river at a rate of almost five knots an hour, the condenser being temporarily changed from a surface to a jet condenser by applying a stream from the donkey-pumps. This gave a poor vacuum at first, but afterwards, at the suggestion of Assistant Engineer Shewell, the flow from the donkey-pumps was divided in two streams or jets with a most marked improvement, being able to maintain a vacuum of sixteen inches.

After making the required repairs we proceeded ahead very well with both engines for twenty-four hours, when, attempting to take up the lost motion of the after engine, the safety limit was passed with another crash, the connecting-rod bolts gave way, letting it fall into the engine well.

We were now in a worse plight than before, and it seemed as though the circumstances would combine to deprive us of our motive-power. It was both dangerous and awkward to work the ship with a single engine, and it was liable at a critical moment to get on the center, and the assistant engineers are entitled to great credit for the skill with which this engine was manipulated. The expedient of turning the bolts was no longer available, and new bolts must be supplied. It was fortunately found that the transporting-axle of our large pivot-gun was the right size, 3 inches. Four bolts were accordingly cut from it, and three at each end of the bolts worked in by hand. Every one knows how difficult this must be, for the smallest inaccuracy would prevent the bolt from entering the groove. That we did it, however, was owing to

mselves from branch and trunk show through the green with a beautiful effect.

There are two harvests—one in January and February, the other, the largest, in June and July. The fruit somewhat resembles a large cucumber; when gathered the shell or pod is broken open and the seeds spread on raised platforms to dry. They have to be frequently turned, and in about a week are ready for the market. The seeds are sown in garden beds in August. When the plants come up they are carefully protected by arbors of palms from the sun, as well as protected against insects.

In January the plants are transplanted to their permanent place where they are set out in squares of 4 feet apart. Indian corn and beans are planted between the rows to give them protection against the sun while young, which are grubbed up as soon as they commence to grow and press against the trees.

The launch in charge of Lieutenant Nichols, with Ensign Hunt, left at the same time as the ship, for a survey of the rocks on the south shore of Trinidad Island, and survey of the south shore, while this ship surveyed the north bank and channel. Arrived off Serpa at noon. Found 10 fathoms in middle of river off the town. The river was so deep on the north shore and rocks lining the Serpa side that I tied the ship to the south bank, with 8 fathoms close to.

Serpa is a town of some consequence, as the custom-house for provincial exports from the Madeira is located here for the collection of duties on produce that does not pass through the port of Manoa. It has a population of about 700 people, and the district of Serpa will number about 2,000 persons. There is but a small export trade of rubber, coffee, and dried fish. Mr. Stone, an American, resides here, owning a estate a short distance below the town. He is an intelligent man, from which information on the affairs of the country may be obtained for the future. Currents, 3 knots per hour.

The volume of the Amazon at this point, as calculated from our observation allowing a current of $2\frac{1}{2}$ miles per hour, amounted to 3,858 cubic feet per second.

August 3.—Passed down to the south of the long island of Serpa. The steam-launch in the parana of the north bank. Beautiful weather, light, pleasant breeze from eastward. Current, 3 knots, which is regarded as the general average rate of the Amazon. Came to anchor at 4 p. m., off the Furo Resaca, on the south bank, in 12 fathoms. Furo Resaca is a long igarapé, which connects with the Furo Cauná, affording navigation with the Madeira or as far as the Tapajós. The steam-launch ran a cross-section and found the width of the river at this point 3 nautical miles.

Sunday, August 4.—Remained at anchor.

August 5.—Sent the large iron lighter in tow of the steam-launch to the shore for wood. Took on board 1,700 sticks. Passed down the river as far as the island of Friexal, at the head of which we came to anchor in 10 fathoms. Found the current to-day about $2\frac{1}{2}$ knots. The banks from the Furo Resaca to the island Friexal are low on both sides, and but sparsely inhabited. On the north bank, opposite the anchorage, there are high hills which bound an igarapé, which comes into the Amazon at the eastern end of the island of Serpa. The volume of the Amazon, measured at this point gave 4,094,396 cubic feet per second.

August 6.—Made 30 miles by river and anchored at 1 p. m., at the mouth of the Parana Pacoral, which is used by all steamers, up to the town, in preference to the main river, which is much longer. Came

with stream-anchor, and on account of defective link, and also partly because anchor was let go before ship was headed upstream, the chain parted at 60 fathoms. Let go port-bower anchor. The buoy attached to stream-anchor refused to watch, and though we spent one day in dragging for the anchor, did not succeed in picking it up. The nights are much more sultry as we pass down, and mosquitoes are very numerous and troublesome.

August 7.—Got under way at noon, and passed down the right bank of main stream. The river along the islands of Pacoral and Onces is very wide, and a broad plain makes out from these islands. Arrived off Villa Bella at 5.30 p. m., and anchored in mid river in 12 fathoms of water. The Brazilian chart gives too much water in cross-section opposite the town. The pilot reported rocks off the town of Villa Bella. Sent steam-launch in to sound, but could not find less than 10 fathoms close to bank. The volume of the Amazon, as calculated from our cross-section, gave, at this point, 3,899,149 cubic feet per second.

August 8.—Visited Villa Bella for a short while this morning. It is located on a bluff about 60 feet above the river. Marks on banks indicate a fall of about 5 feet thus far in the Amazon. The town presents rather an imposing appearance from the river, with its long row of one-story white houses. But on going ashore one finds the whole village consisting of the single front street, the suburbs being confined to half a dozen mud huts. The town owes its chief importance to being the point of export and import for the Ramos or Carmunan, which extends for 150 miles, and connects with the river Madeira, 60 miles from its mouth. On this inland river is situated the town of Manbeés settlement of the Mandirwea Indians, noted principally for its manufacture of the much-sought-for guarana. The land bordering on the Ramos is spoken of as being of more than ordinary fertility. Considerable quantities of cocoa are also exported from Villa Bella; as also dried pirarum and a little rubber. The population of the town is about 400, and of the district 5,000. Came to at 1 p. m. at the head of the islands Caldeiros. The river forms two channels at the head of these islands, and while there is good anchorage, it must be approached with caution from the south shore, as there is but 3 fathoms quite a distance from the island, which would only give a few feet in low water. A short distance above the Caldeiros islands are the Sierras Pauntin, the boundary line between the provinces of Para and Amazonas. They are remarkable for rising directly up and a very steep slope from the river bank, to a height of 500 feet. It is the only instance of high hills jutting abruptly into the river from its mouth to Manous. These sierras are heavily wooded from their base to summit. Fresh breezes from the E.N.E. till 2 p. m., then a perfect calm. Night very hot and sultry.

under way at 7 a. m. Sent launch down the north river. Fresh breezes from N.E. from 7 a. m., and continued down the river. Spoke a steamer at noon bound up the river. Reported that the delayed steamer Rio de Janeiro had arrived at Para, which will assure our getting a mail there. Sent the steam-launch around inside the island and quite a large village known as Juruty. Anchored at 1.30 p. m. Though there is good anchorage, care is required in approaching from across the river, as there is nearly a 6 feet, not more than 300 yards inside of 12 fathoms. A river of same name for some distance, and found it wide enough to pass easily. Cocoals of cocoa lined the banks, and it took a canoe a day to reach the head of the creek,

on which were many houses. Cattle may be obtained here from the Indians. During our stay at Santa Ana, on our passage up, the litigation was engaged in a "festal" in honor of the christening of the babies that had been born during the year. Had a great many mosquitoes, but a light breeze from the eastward tempered the air, and made it less close than previous evening.

August 10.—The steam-launch left at 6.15 a. m., to pass around the north of the island Bon-Jardin, while we got under way later, and passed down on the south side, which is the one principally used. The river from Bon Jardin to Obidos runs nearly straight, in an easterly direction. Arrived off Obidos at 2 p. m. The water is very deep close toward the town, there being 45 fathoms 100 yards from the shore, and a strong eddy or counter-current at this distance off. Came in slowly within 100 feet of the beach, and anchored abreast of, and at the foot of the bluff, upon which the fort is located, and a little west of the water battery, in 13 fathoms. Got a line out immediately from the port toward the shore, and also one from the port quarter. Ship laid very quiet to the westward, head downstream, with the sternpost just touching in soft, muddy bottom.

Obidos is a scattering town of about 500 inhabitants, skirting the river and extending back half a mile. The bluffs upon which it is located, as ascertained by my aneroid gave 80 feet for the lower, then rising to the bluff, upon which is a small chapel dedicated to Our Savior, from the summit of which there is a fine view up and down the river.

Obidos, from the many unoccupied and ruined houses, would appear to be in a flourishing condition. It seems to be affected with the same apathy as one sees in all interior towns of South America; once enough labor is undertaken as will furnish the bare necessities of life, no more is the last town on the Amazon within the limits of the province of Para. It is the only fortified position on the river, there being a water battery of eight 32-pounder guns on the bluffs which, however, could be passed without difficulty at night. This is the extreme point, the furthest from the sea, at which the tide makes itself felt, there being a fluctuation of a couple of inches.

The district, which extends back indefinitely and up and down both sides of the Amazon, contains about 15,000 inhabitants. There is considerable trade in cattle, the rolling country affording good pasture, and all the Upper Amazon received its supplies of beef from this place. The banks of the Amazon are in this vicinity generally tall, and covered with cocoals, and Obidos, in good years, will ship 30,000 arrobas of cocoa, also some 500,000 pounds of castawhas or Brazil nuts, and some of copaiba. The river at this point is but 2,200 yards wide, and in the middle 55 fathoms, the greatest depth we have yet found in the Amazon.

August 11.—Passed a quiet Sunday at anchor; a good many persons visited the ship in the afternoon.

August 12.—Got under way at 7 a. m., and stood down south bank, inch going to the north of islands. Anchored at 2 p. m. off a place called Lago Grande, the proprietor of which was engaged in the manufacture of tiles.

August 13.—Under way at 8 a. m., and met the launch around by the island and Marinarituba. At the end of this island the Amazon makes a sharp turn to the south, and at the angle of the bend comes in the long parallel of the island Paranatoba there is a large praia, which we did not know, not knowing the channel, attempted to cross; soundings continued to decrease to 3 fathoms, when we anchored; sent out a boat to sound

and found that the channel, with $6\frac{1}{2}$ fathoms, ran down along the south bank. Got under way at 1 p. m., and stood over to the south side. Arrived off the mouth of the Tapajoz at 4 p. m. The water of this river is clear, and the sandy bottom imparts a greenish tinge to it. Here was presented the same phenomenon as at the mouth of the Negro—the water of the Amazon not mingling with the Tapajoz, a sharp dividing line between the two rivers extends across the mouth of the latter. One mile from the mouth is the town of Santarem, the largest place on the river bank. It is beautifully situated on rising ground, in front of which is a beach of white sand, and the junction of the two rivers gives a large river front which adds much to the situation. The country back of Santarem is hilly, as are also the banks of the Tapajoz, with numerous cattle ranches on the latter. The merit of the discovery of this place and of the friendly relations that existed between the Portuguese and the Indians is due to Capt. Pedro Texeira, who, in 1626, under superior orders, went up the Amazon in search of Indian slaves, and brought none from Santarem. Forty years afterwards the Jesuits, at the instigation of the local government, founded a mission here. In 1694 a fort was built on a small hillside to the east of what was then the village and called the “Fortress of Tapajoz.” It was intended to prevent any outsider from entering the Tapajoz, and to guard against any proposed descent of the Amazon. Under the protection of the fort many houses were erected, which formed the nucleus of the future city. In 1754 the missionary parish and neighboring village were consolidated, and the name given to it by the Government of Para. In 1833 the name was changed to Tapajoz, but in 1848 a provincial law restored the former name, and it was made a city. Population of Santarem about 3,000, and the district 5,000; this was a place of considerable importance with the Portuguese, and, judging from appearances, improvement has not been rapid. Borracho from the tree guarana, cocoa, castanha nuts are the principal exports. It is interesting to Americans as the place where a number of colonists from the Southern States settled immediately after the war. Most of these became discontented and returned home in the next year; some ten or twelve families remained engaged in the sugar-cane, and I am glad to say they speak encouragingly of the prospects, and are making slow but sure progress ahead. The rainy season commences here in July and lasts till November. The ignorance on the part of the pilot, though arising from a mistake when the ship swung to the ebb, it grounded astern of the river tending in shore. The better anchorage is off the mouth of the Tapajoz, where the water is not so bold. Off the north side of the river, and a ship must anchor in from 12 to 14 fathoms when swinging inshore. The action of the tide produced a regular ebb and flow in the Tapajoz while the Amazon was in flood. This is the more singular as the series of currents during the day for twenty-four hours failed to show any direct influence owing to the influence of the ocean tide, which is about 600 miles from its mouth. I account for this by the fact that the Amazon flowing from the south, and through a drier river, the main river; while the Tapajoz at its normal level, by tide, would be higher and would back up the Tapajoz to the same level of the latter became equalized to the level of the Amazon. This would of itself cause slackwater in the mouth of the Tapajoz. Therefore, when the level of

apura. Anchored at 2 p. m. off the north
 row passage through which the ship came
 will average 700 yards, with depth vary
 e channel a little toward the concave side
 arrow channels is the most picturesque on
 aos. Vegetation and water meet, the roots
 er, and stimulated by the hot sun, exhibit
 pical growth. Apparently where a vine
 gs in a graceful luxuriance, broken here
 ry palms. At the close of the dry season
 tiful by the change in color of many of the
 es luxuriously blended all the shades of
 swung one hour to flood, showing this
 ich the tide overcomes the current.

day off the mouth of Parachachi, and found
 but $3\frac{1}{2}$ fathoms, which would give $4\frac{1}{2}$ fath
 ater is not, however, more than 300 feet wide

Steamers are obliged to ascend the Pra
 Aturia to the Breres River under the pen
 eyed. Under way at 6.30 a. m., passing
 me 6 miles till the mouth of the Aturia
 athoms at mouth, then deep water through
 much wider than the Parachachi, as we had
 ighter and steam-launch secured abreast
 reres River some 3 miles below the poin
 red. Passed Breres at 11 a. m. A long
 point of the mouth of Breres River wel
 and; care must be taken not to approach

. Anchored at 3 p. m. off Guajara lights
 the first part of night, but the weather
 ddle watch to obtain observations.

5.30 a. m. High water yesterday evening
 : than at Para. At 9.30, passed the town
 be a larger place than Breres. At 4 p. m.
 st island Xipotuba; stood over to it across
 oms to the shore; pilot knew nothing of the
 he beaten track. Took aboard 1,500 sticks
 the island Janaraca, and anchored after
 ghts Goiabal. There is a very long shoal
 d Janaraca, upon which there is not more
 d off Goiabal light. Going up or down
 l to keep over to north shore, keeping lead
 till 5 fathoms are struck on the Goiaba
 o southward and westward. Fresh squall
 rain at 4 a. m.

athoms from anchorage. Under way at 5.30
 t., Cotejuba light bearing northeast, distan
 ie under six boilers and made 45 revolu

he steam-launch in charge of Lieutenant
 the shoals of Gozabal light, which position
 y for Para at 11 a. m., half-tide. The pilo
 in the ship aground, but with a rising tid
 or this channel is to head for the light of
 f Para is opened out, then steer so as to
 the two islands, and keep this closed til

head over for the point on the right hand going up. From at the chart is a good guide, but vessels of the draught of the rise, 18 feet, should not attempt to go up until half-tide. The distance between high water at Breres, nearly the highest point within reach of flood tide, and Para is about three hours. If steamers were the latter on the last of the ebb, they will be able to carry down with them nearly the whole way to the former point. This is important to remember, for the ebb runs very strong. The *Enterprise* arrived off Para in the afternoon after an absence of six months, having during this period completed a running survey of 10 miles.

Santa Maria de Belem, or Para, situated on Para River, 100 miles from the Atlantic, is the seat of the provincial and Roman Catholic diocesan governments, and the place where the provincial assembly meets. It is the port of all the commerce of the province, and, as the receiver and distributor of the products of the Amazon, has before it a splendid future. It contains many public edifices, banking establishments, various mercantile companies, an excellent naval dock-yard, a college for gentlemen, and, in addition, several schools, attended by 403 male and female students. In the municipality outside of the city there are twenty-one primary schools, attended by 1,418 scholars. The health of the city, except in times of epidemic, is generally satisfactory. Malarial disease can be traced to a want of cleanliness. The streets are cleaned by rains, and when these fail on a number of consecutive days there are places which become unbearable. Para is destined to become, if not already, one of the finest cities in the northern part of the empire, and if the municipal rents, which are estimated to amount to \$10,000 yearly, are properly expended on works of utility and sanitation, it will become one of the first cities of Brazil. Having fully carried out your instructions, we sailed from Para on November 4 for New York, where arrived on the 25th of the same month.

MADEIRA RIVER.

This, the greatest tributary of the Amazon, rises in the Andes, in the vicinity of Cochabamba, latitude 18° south, longitude 66° west, flowing generally northeast for nearly 2,000 miles, empties into the Amazon in latitude $3^{\circ}22'30''$ south, and longitude $58^{\circ}45'$ west. Though generally known to geographers as the Madeira throughout its whole length, it is really divided into different divisions, and known locally under many different names. We have first the Lower Madeira from its mouth to its first falls, those of San Antonio; then the falls of the Madeira, fifteen in number, embracing 229 miles of river; then the Upper Madeira to the junction of the Marmoré and Guaporé rivers, a distance of 100 miles. From this point it is only known as the Marmoré River to the mouth. Thirty-nine miles below the upper fall, known as the Guaporé rim, opposite the fall known as the Cachoeira Madeira (on account of the large quantity of wood found here, brought down by the river), the Madeira receives the river Beni. A cross-section of the Beni, taken by Keller, at its mouth gave a width of 1,000 meters and an average depth of 15 meters. As it discharges at its ordinary stage a volume of 44 cubic meters per second, something more than the Marmoré and Guaporé at their junction, it might in justice be considered as the main stem of the river, and the two last tributaries, and the name Madeira applied to it only below the mouth of the Beni.

The exact boundaries of Bolivia and Brazil are a matter of dispute.

is noble enterprise, for she, of all nations, should reap the great benefits from the success of his undertaking. It is, then, in the navigation of the Lower Madeira from the Falls of San Antonio to its mouth, in view of the probable construction of the Madeira and Marmore Railroad, that the United States has the most interest, and to this particular portion of the river I have, under your instructions, confined my survey and investigations.

CHARACTERISTICS OF THE LOWER MADEIRA.

By the Lower Madeira will be understood that part of the Madeira from its mouth and the Falls of San Antonio.

In the character of its banks and its numerous islands it resembles the Mississippi River. In one feature, however, like the Amazon, it is very different. That is, in the number of small lakes that are found on the banks throughout its course, with outlets on the river itself. These lakes trace a vast network of internal water communication which enables the rubber-hunters to reach with canoes a large area of country that would otherwise be almost unavailable, as they would be compelled to travel long distances by land to reach the numerous rubber trees which are the great source of wealth of the inhabitants.

They abound in large quantities of fish, turtle, and wild fowl, and on the river is high are the homes of numerous alligators. Near these lakes, where the wild Indians have ceased to frequent them, are the little huts of the "seringueros" on their borders, which points for the much larger population than is apparent to those who do not see the inhabitants on the river bank.

The Lower Madeira, through its whole course, may be said to flow through an alluvium. The only out-cropping I noticed in the first part of the river was very small, apparently trap, at the foot of a low hill on the left bank at the foot of the island Orucurutuba. Above there is more or less, at intervals, at low water, a ferruginous conglomerate underlying a layer of clay. Of such a character is a portion of the left bank above the Uroa rapids. This conglomerate is one of grit stone, little pebbles of dolomite cemented with oxide of iron. Its beds are generally horizontal and from four to five yards thick. This ferruginous conglomerate offering more resistance than the underlying argillaceous gritstone, it is broken up and crumbles by the action of the water, allowing the conglomerate to pass over into the bed of the river, forming bowlders which, under the general name of "pedras," are the terror of the Madeira steamboatmen.

The occasional irregular resistance of the banks causes the course of the river to become serpentine. Banks of sand are formed on the convex side, and the concave side is gnawed away by the constant action of the water, causing the river to assume an irregular course; then the mighty force of increasing floods will force itself through the isthmus, straightening itself again and cutting off a portion of its bed, which accounts for the numerous lakes spoken of as peculiar to the adjacent territory of the Amazon and Madeira.

This untiring work of the river floods, cutting away and forming new banks, is expressed by the inhabitants of the Amazon Valley under the names "igapó," "varjem," and "terra firma."

The igapó is the newest alluvium of the convex margin, whose elevation is not above high water mark, and is therefore annually overflowed. The vegetation is well marked, producing woods of a soft and generally less nature, excepting the Seringa (*Siphonia elastica*).

The varjem includes the country whose elevation is between ordinary and extreme high water, not subject to periodical overflows. Here abound the numerous varieties of the palm family, the mulatto wood, beringa, cacao, and others. It is also suitable for the cultivation of the sugar-cane.

The third, the terra firma, are the remains of ancient water-courses through which the rivers have formed their channels, and in the Madeira appear in the form of bluffs, not over 100 feet high, and formed of red and yellow clay. It is only on terra firma are found the hard and close-grained varieties of wood valuable in commerce. Therefore, from the Lower Madeira will never be exported any large quantities of valuable woods, though they abound in the vicinity of the falls of the Madeira.

In a word, then, the Lower Madeira flows its entire course through flat country, with occasional bluffs not over 100 feet high. Its banks are annually overflowed from February to the middle of April. The lowest stage of the river is in October. It commences to fall about May, and averages about 6 feet a month till July 1, when it goes down more rapidly at a rate of not less than 8 feet.

The average rise and fall is about 40 feet, and the extreme difference between high and low water has ranged as high as 48 feet.

CLIMATE.

The temperature is always high, but the nights are not uncomfortable. The highest reading of the thermometer was on July 23, at 2 p. m., 91°, and from 83° to 88° may be considered the daily temperature from 8 a. m. to 8 p. m.

July and August are the hottest, as well as the driest. But there are at times a cold wind from the southwest in the summer months, when there is a great and uncomfortable fall. We experienced two such days at anchor 200 miles from the mouth, when the thermometer fell as low as 70°, and did not rise above 77°.

Observations of our wet-bulb show that the moisture decreases very much as the river is ascended.

At San Antonio, while the mercury frequently goes to the nineties the heat is not as oppressive as in the Lower Amazon, where there is not evaporation enough in the air to cause the wet-bulb to fall below the outside temperature.

The nights at San Antonio are very much cooler than near the mouth, there being a difference of ten degrees. The great difference of temperature between day and night at San Antonio makes rheumatism a frequent complaint.

The experience of the *Enterprise*, and what I have gathered from other sources, lead me to believe that the valleys of the Amazon and Madeira may be considered healthy. Persons navigating these rivers would be less subject to disease than if engaged in similar occupations on the great rivers.

The *Enterprise* has been three months on constant service on the Amazon and Madeira, and we have not had more than a handful of cases of intermittent fever, and these mild.

San Antonio is notoriously unhealthy. No satisfactory reason has been given, and it is alleged that the water remaining in the holes in the rocks after the water falls stagnates, and throws out pestiferous vapors. Probably so, but the real cause, in my opinion, is in the streams which run into the river above the town, and a large lake back of it. As the water dries up by evaporation, there being no outlet

and seeing the impossibility of taming the savages, they formed a company of war as considered sufficient force to penetrate the forests. The real object of the expedition was conquest. Five days of foot travel brought the party to an Indian town where there was a feast over the head of a person recently murdered on the river. They killed some, wounded others, and, their ammunition being expended, allowed none to escape.

A few young children of the head men were captured, and allotted to those who were willing to "lend themselves to a work so clearly defined in favor of humanity." Their efforts produced no good results, and the report of their examination to the government unwilling to use force to exterminate "these wild beasts" or to take any measures to suppress their violence, has been of no avail. This indifference of the government and the disastrous occurrences in this district have forced the inhabitants of St. Roque and Buena Ventura to abandon their habitations, rubber-producing estates, machineries, &c., with great prejudice, if not entire ruin, to their interests.

In 1871 the government established a missionary station on the Machado River, which has been put in charge of an Italian priest, Theodoro Maria Portharara, during his life or pleasure. This priest, of astute character, even at the cost of great sacrifice and the risk of his life, has been unable to penetrate near the vicinity of the Parintintins, although in his last attempt he was accompanied by 300 men from the mission of San Francisco.

It would be tiresome to read an account of the barbarities committed by these Indians in this part of the country. From the opposite bank of the river the victims of the savages receive no assistance in food, fuel, or supplies. After attacking and burning a town the savages set fire to the houses.

Above the Parintintins, in the interior and at the mouth of the Jamaré, an affluent of the Madeira, there is another savage tribe called the Cangapirangas, who, although not so ferocious as the others. Further on we find the Carypú tribe, more domesticated.

The inhabitants of the Lower Madeira may be divided into two classes: the *seringueiros* or *negociantes*, and the *laborantes*. The former, few in number, are either Portuguese or Brazilians, and through them the whole transaction of collecting the native products of the forests are carried on. They collect about them a great or less number of the poor classes, Brazilians, negroes, mestizoes or Indians, according to their wealth and influence. They all keep small stores, at which are supplied all the wants of their dependents, in barter for whatever the poor classes can procure that is valuable. They buy the rubber and *copaiba* at not more than half its value, and give in exchange rum, *cachaça*, *farinha*, cotton goods, and hardware, at a profit probably of a hundred per cent. The consequence is the poor laborante is always in debt to his master. Many of them make fortunes, but the system of credit and debit is so general in this country that they lose a great deal of their bad debts from their men. In no other way could I account for their not becoming wealthy, for their profits are enormous.

ANIMALS.—FISH.

Ascending the Amazon or Madeira, the stranger is struck with the absence of game. Not even the all-abundant monkey was seen by enterprise in its passage of the river. Probably the submerged state of the banks in the rainy season causes the game to seek higher land.

The anta or tapir is met in large numbers in the vicinity of the mouth of the Madeira, as also deer and peccary, and the onça or American leopard. But for the reasons above stated these animals are rare on the Lower Madeira.

Parrots, paroquets, macaws, toucans, and many other varieties of birds are very numerous. But the lack of game is amply made up with a large quantity of fish in the Amazon and all its tributaries.

The one fish greatly prized by the natives is the *piracurú*, which attains often a size of eight to ten feet in length. On account of its abundance, and the place it fills in the food supply of the inhabitants

It may well be called the codfish of the Amazon. It is not caught with hook and line, but shot with bow and arrow, and on coming to the surface is harpooned and secured. The head cut off and the vertebræ removed, it is laid in large flakes on a platform of bamboo to dry. Large quantities made up in bundles of an arroba, thirty-two pounds each, are sent to Para, and form an important article of diet there and the neighboring seaport villages.

The peixe-boá, or cow-fish, from the resemblance of its snout to the nose of a cow, is highly esteemed. It is the same as the manati of the Rio Atrato, and in fact is not a fish, but a mammal, and should, I think, be classed with the seal family. The Madeira abounds in turtle, of which there are said to be four varieties—the Tortaruga Grande, Capocerda, Trocajo, and Matá-Matá. The Tortaruga Grande is the one most sought after and in the most abundance.

The common practice of catching the turtle is to shoot them with a loose barbed arrow. The barb is secured to the arrow of cane with a small line. When it enters the turtle's shell it is disengaged, and the shaft of the arrow floats attached by the line. They are also caught with a baited hook, but the former is the favorite method. Every Seringuero on the Madeira has his turtle-pond back of the house, where great numbers are kept. They constitute a favorite article of food with all classes of Brazilians, rich and poor.

Owing to the destruction of vast quantities of turtle-eggs on the praias of the Madeira during the breeding season, August and September, for the purpose of making tortaruga manteca, or turtle-oil, their numbers have been greatly diminished. But as on this account the manufacture of turtle-oil on the Madeira is no longer profitable and has been discontinued, it is probable the supply of this very necessary article to the inhabitants of the Madeira will now keep up with the demand. The destruction of turtle-eggs is, however, actively carried on on the Solimões or Upper Amazon, where the tortaruga is still abundant. A species of land-turtle known as the "iabuty" is common on the low ground of the Madeira River, and it is highly prized for food.

PRODUCTS.

The products of the Madeira may be said to be such as are entirely extracted from the forest or river.

While the lands bordering on the river are fertile, and would produce large quantities of cacao, mandioca, plantains, maize, and tobacco, one sees in passing nothing beyond a little clearing around the huts of the natives, upon which are growing a few scattering plantains. Higher up the falls, where the Bolivians have settled with their Mojos Indians, attention is given to the cultivation of the soil, and they have plantations of plantains, mandioca, and maize; but it is the land and confined to the more wealthy Bolivians, who make their homes.

Portuguese and Brazilians, only looking on their residences as a means of passing time, seem to have no interest in the improvement of their places. Their one dream is to make a fortune in "borracha," the commercial rubber, and retire to Lisbon or Para, though probably few

The great product of the Madeira is rubber; all other pursuits and employments are given up for the extraction of this valuable

The best authorities attainable I should put the production of rubber from the Madeira at fifty thousand arrobas, or one million six

ndred thousand pounds. This, at thirty-five cents per pound, the present price in Para, would make five hundred and twelve thousand dollars. The value of the other productions from the river is insignificant.

The rubber tree, known here in Portuguese language as *seringa*, or *Atrato*, another great source of supply, as caoutchou (*Siphonia elastica*), is not found below Borba.

The *siphonia* grows best where it is exposed to the annual overflow of the river, and therefore is found in its highest state on igapó, the most recent deposit, and vargem or older deposit. It grows also on the terra firme, for it is found about the falls of the Madeira, but I am inclined to think the sap is not of as good a quality as where the tree grows in the river soil.

The season for gathering rubber may be said to commence in June and extends to the following February, when the different "estradas" become impassable from the overflow. These estradas lead from the hut of the seringuero, embracing all the trees in the neighborhood. The sap, which resembles cow's milk, is collected in little tin cups, which will hold about two gills. The collector starts at early daylight, and when he reaches the trees he cuts a gash in the bark with his machete, and a cup is stuck in just below, so as to catch the sap as it exudes. For several days are used, which are placed opposite, but on the same circle. The cups are first arranged at the top, as high as the hand can reach, then shifted down day by day to the ground. They are then again placed at the top in different positions, the idea being in this way to cover the whole surface of the tree. The cups being set, the collector begins to gather the sap, visiting the trees and pouring the contents of the cups into a calabash. Where the trees are distant they are visited but once, nearer twice a day. Reaching home, he empties the milk into one of the large turtle shells which are always found at the door of a hut on the Madeira, and proceeds at once with the smoking process, which is generally done in a hut constructed for the purpose, as the resinous parts will soon separate and produce an inferior article. An earthen jar, without bottom, and with a short, narrow neck, is placed over a fire made of the nut and banana palm, whose smoke alone has the power of quickly coagulating the *seringa*. The operator, pouring a little of the milk on the surface of the jar, with a small wooden shovel or canoe paddle, taking care to distribute it evenly and evenly over the surface, turns it slowly over the smoke until it is thoroughly stiff. This goes on until all the sap is exhausted or the calabash becomes unwieldy. A slit is then cut in the plancha, the paddle slipped in, and a stick run through the mass, on which it is suspended to allow the water to evaporate. Enough planchas are collected on one stick to make an arroba, thirty-two pounds; it is then tied up with bark, and in this condition is ready for market. The skins at the bottom of the cups, which drop at the foot of the trees are all preserved, smoked, and made up into a round mass, forming an inferior article known as *semamby* or *cabeça de negro*. One man will probably collect from five to ten pounds per day. The *Siphonia elastica* is a noble tree, often 100 feet high, and 24 inches in diameter. Its leaf is elliptical, about the size and somewhat resembling our elm, and of a light-green color. A tree milked as described will not last more than twelve years, and gives very little sap toward the close of this period.

I am told that in fifteen years after planting they can be tapped for their sap. Under the system pursued, as the valleys of the Madeira and its tributaries are the producing rivers, it would seem as if the supply of the rubber tree has about reached its maximum, for many of the trees have died.

prospected. Before long, however, it will be the Brazilians will regret that they have been the case in any other country with the annual production.

Finally, it is not as bad as the one practiced in the Amazon and Darien, where the tree is at once cut down and has compelled the caoutchoudos of those regions to travel at constantly increasing distances.

One will hear the terms *seringa* and *borrachas* in connection with the rubber product. Properly speaking, *seringa* is not the name of the tree, but of the sap collected in the cups, while *borrachas* is the name of the product after it is prepared for market. One never hears of the *seringa* he has bought, but the *borrachas* he has bought, in the market of Para.

The price of the *borrachas* is about 10 cents per pound on the Madeira, when at its lowest, in Para. The difference, less freight to the coast, is what the traders make, increasing their profit on the goods with which the money is paid down to the native collector. At the end of the season he is always in debt to the trader, and the latter is sure to excite the desire for a new but high-priced bauble, for instance, a watch or a balance on the side of the shrewd Para trader.

The most important article of export of the Amazon is the oil of *copaiba*, *castanha* or Brazil nut, and a considerable amount of dried fish, "*peracará*," produced from the milk of the rubber, the sap of the tree, but is an unctuous substance collected from the tree. The latter is therefore bored with a small tap put in, and the juice flows out and is collected in a cup. From one to five gallons may be obtained from the tree, but the tree is not drawn upon oftener than once a year. The substance drained from the core is as valuable as the sap taken from the rubber tree, and the yield is less each time from the first yield.

The *castanha* which the Brazil nuts are collected, grows to a great height. The nuts, so familiar to us, are enclosed in a hard exterior shell of about the size of a cocoa nut. The tree being too lofty to climb without ladders, the shells are dropped from the tree and are broken by the feet of the natives. The outer covering is so hard that it can be broken off at the first blow without breaking the nut. Pretty and ornamental cups are made from the shells. In the Madeira press the kernel of these nuts into a paste, which is then dried in large copper pans, also used in the preparation of the *caruá*, in which they make a kind of bread, and the oil is used for dressing their hair.

The seeds of a small plant of the *Paullinia* family, which grows on the Madeira, though the largest supply is obtained from Mauhis, back from Villa Bella. These seeds, when rolled up the size of a Bologna sausage, almost exactly resemble one.

The *caruá* is used to grate the *guaraná*, or guarana, a tumbler of water, sweetened with sugar and a little bit of the *caruá*, slightly that of almonds, but a little bit

and, though palatable, there is nothing seemingly about it which accounts for the avidity with which it is sought for in the interior of Brazil and Bolivia, where it brings \$3 per pound, while selling on the Amazon for 50 cents. It is said to possess medicinal qualities, and is very soothing to the nervous system.

SURVEY.

The Enterprise anchored off the mouth of the Madeira at 3 p. m. in the afternoon of June 17. The large island of Trinidad extends across the mouth, dividing the Amazon into two channels, while a third, caused by the island Autuz coming out by the mouth of the Madeira and separated from it by what is known as Madeira Island. The latter flows parallel with the Madeira and would produce the impression that it was the same as the Madeira, but the great difference of current makes immediately that it is a part of the Amazon and not its tributary. Considering the great length of the Madeira, its mouth is insignificant. There is more than one mile wide between the point of Madeira Island and the island of Porças, to the east, with a depth of seventy feet.

The lower portion of the Madeira is affected entirely by the level of the Amazon for its depth. As the Amazon does not commence falling before the middle of June, while the Madeira is much earlier, there is consequently a backing up of the latter, so that at the time we passed for the first fifty miles the banks were not more than two feet out of the river, which was about the same as on the main river.

The ship anchored at 5 p. m. 15 miles from the mouth, at the first landing on the river, at the foot of the island Orucuritiba. Here

are small bluffs 25 feet high, the first seen; and a small outcropping of rock, the only rock met with in the first hundred miles.

Thirty miles from the mouth, at the head of the island of Rosahui, we found the first shoal place of the river. At this time there were rocks upon it. When we passed down in the same place but five days later, when the Amazon is at low water there will not remain more than a few rocks.

A survey of the Madeira soon becomes as monotonous as one of the Amazon. At first it is a great relief to be away from the vast expanse of the great river, and to be able to take in at a glance both banks without the feeling of littleness that one experiences on the Amazon. The same everlasting tree line, the deep silence, only broken occasionally by the screech of a parrot, the absence of animal life along the banks, except the lazy crane or the pretty kingfisher, so characteristic of the Amazon and tributaries, soon wearies, and there remains little interest to distinguish one day from another as we pass up the river. After passing the island of Rosahui the current increases to three miles per hour, and varies from this to two and a half knots for the first hundred miles.

There being no rubber gathering below Borba, but a few inhabitants met with up to this point. We maintained an average speed of two and a half knots, which gave us about five miles over the ground. The banks of the Madeira, being entirely alluvial, are constantly undergoing a great change.

Hundreds of islands are met with, the ends of which are to be avoided, as sand-bars always make out from them.

Forty-six miles from the mouth is met the Furo Canuman, which, running 180 miles to the eastward, empties into the Amazon under the name "Furo Ramos," just below Villa Bella. It is navigable the whole

land is reported fertile, and a considerable Mudurucus Indians are settled upon it.

mouth is the town of Borba, on the right of the ordinary river stage. It was the first founded originally by the Jesuits, in the middle there is a small production of tobacco, which but the amount is insignificant. Borba pre-existence; the forests in the vicinity do not most of the inhabitants who have had the higher up in the rubber region.

José Joao, at a place known as Inatarouta, e, which should be avoided, as in the Enter is upon it. The best channel runs close to n one hundred feet distant.

roca there are a number of rocks in the river as Gauchos. The channel lies over on the h is free from rocks, and as close to it as the go.

ent of Muras Indians, the only pure Indian river. The Muras are a treacherous, lazy

They may be said to be half civilized, have he village, and no longer molest the inhabit- ago they were much dreaded; but a per- powerful neighbors, the Mundurucus, have id spirit.

posite the town than at any other place on

tions on the river until the island of Araras many rocks on the river-bed opposite the ne. The river narrows here, the current is less than six fathoms in the channel, which

f Uroá, 200 miles from the mouth, the Enter- ion of June 21, five days from the mouth of

by observation coming up, and on our return ts, so that in a distance of two hundred miles vo termini, or one in every thirty miles, have

a up to the point of anchorage has been con- as in the plan described upon the Amazon.

checked every 30 miles the only errors that eed. With a regular number of revolutions mains the single error of current. But with and a minimum of two knots, as found by our uld be determined in a great degree by the her wide or narrow, we rarely found our line position as defined by our observations; and lay's work, would not make an appreciable particular point.

half a mile to a mile in width; and nowhere p to Uroa Island less than 6 fathoms. Later, places had 5 fathoms, and probably the river xtreme low water.

Uroa Island had long been an object of dread leira River, on account of the rapidity of the

rent, and the number of bowlders in the passage, which caused g
lies in the stream, and gave an appearance of danger more imagin
n real.

Our pilots declined the responsibility of taking the ship through,
orance on my part of the situation compelled me to be governed
ir opinion. The crippled condition of our machinery, working
one engine, liable at any time to catch on the center and not
dition to back, added to the difficulties of the situation, and fo
with reluctance, to give up the idea of proceeding farther up in
p.

Measures were at once taken to prepare the steam-launch for
ther survey of the river to the head of navigation. The water-ta
re taken out and coal-bunkers put in their stead, which enabled
ncrease the total amount of fuel to 4,000 pounds. Lieutenant Bl
ger was selected to command the party, assisted by Lieut. C
rkins as astronomer, and Mr. Sparrow as surveyor and draughts
e crew consisted of three seamen, a machinist, fireman, and pilot.
Ample provisions for eight men for a month were provided, wit
necessary equipments, including two chronometers. The launch
all, having but 28 feet length and 9 feet beam; therefore I added
ghy to be towed with part of the provisions, and which would
e the party to have a small boat at hand if needed.

It was not expected that the coal would run the launch but a s
tance, and funds were provided to purchase wood as fuel. They
npelled to cut the wood in short pieces of six inches, and this pr
be one of the most fatiguing duties attendant upon the expedi
was found out by accident that the Anaja nuts used for smoking
inga, made a hot fire, and after that, when they could be procu
de an excellent substitute for fuel.

The principal difficulty experienced in using the launch in our su
se from the great deviation in the compass. It was found not p
to swing the boat properly so as to arrive at any reliable data,
en if it were, there was really no place in the already overcrow
the steamer where it could be of use and not interfere with o
ually important objects.

Finally we had recourse to deflecting angles, using the dumb com
ewed to the draughtsman's table. Though the latter could give
true course, it would give us the angle between a course already
ned and the bearing from this to some other point from which
inch would be headed. Thus, before starting in the morning,
agnetic compass would be taken on shore, and the bearing of an
t taken, which would be the first course. This was laid by the d
npass, the launch headed for it, and upon ending the line, the
r of degrees to the right or left of this line of another object ab
which the launch would be steered, would be laid off.

The plan worked admirably in practice, l
asing watchfulness on the part of the c
gle error would throw out all the remain
deserving of great credit for the painsta
pt up his work. It was necessary, in o
stly, that the positions obtained nightly
ich employed Lieutenant Perkin's time
utenant Blocklinger had all he could att
g of the launch, the cooking of food, and
ie crew was necessarily reduced to the s
iciency, and the work required of all ha

ing period the boat was away the thorough were carried out elicited my highest ap-

of so small power to be able to make much so the upward voyage was employed in s, keeping close to the shore, and on the in and soundings made.

Blocklinger were that he was not to make id observations were to be taken every m to maintain a close check upon the up the slackwater side, keeping out of . far as possible. It was my intention at the party in person, but a desire to make Troa Rapids, and a feeling that something absence that should require my presence e conclusion to go up later in one of the ra, and come down from San Antonio in nel. Besides, I felt I could acquire much lots, not to be had in any other way, as to put but little confidence in our own. m. on Tuesday, June 25.

orking parties were sent on shore to cut

The experiment of burning wood and ful. It was found that sixty pounds of h a speed of 7 knots, and that 300 sticks on of coal. This amount of wood cost us ost us \$28. This was an important saving, abered if ocean steamers are ever called i Para to San Antonio. Had I known it nment the \$1,000 I paid as freight for a ie mouth of the Madeira in a lighter. Of nce in the wood. If very green, it makes tially dry, with a light bed of coal, it an-

ropose to make a more special survey of, om the foot of the island where we were

id current of 3 miles an hour, with a row-

ght, in the gig, accompanied in whaleboat sign Hunt. Had some difficulty in find-line, on account of dense undergrowth on one of 440 feet, and fixed by sunset suffi-ank to cover the river to the head of the re really nothing more than great eddies bowlders.

y a naval steam-launch, commanded by a avy, arrived with a letter to me from the amazonas, Baron de Maracajó. The cor-sident and myself has already been laid keep up the line of events it is only neces-is, the Enteprise was in the Madeira River perial Government of Brazil, while that nen of war, and he requested that I would o the Amazon. He was correct in saying visé, but as I understood in leaving the

United States that such had been promised, I replied that I thought must be mistaken in his assertion; but, however, if he still declined to grant the necessary permit, upon hearing from him, I would depart. I felt assured before I could get answer to my letter our survey would be in such a state of forwardness as to enable me to carry out my promise of retiring from the Madeira without slighting the important work for which the Enterprise has been dispatched from the United States. As supposed, his excellency replied that he could not grant the required permission, but by that time I was on my return from San Antonio on the Enterprise, which upon reaching, our survey being completed, was stepped down by easy stages to the Amazon.

The base-line measured and stations determined, we proceeded to run series of soundings over the rapids, the stations at different times being occupied by Lieutenant Nichols, Master Wright, and Ensign Hunt. Simultaneous sextant angles were taken upon the sounding-boat at the dropping of a flag. The survey was very laborious on account of the strength of the current. Thirty-two cross-lines were run, the river averaging about a mile wide, and four up and down lines, at equal distances. I myself, Lieutenant Spalding being with me to record the soundings, after pulling a down line the boat had to be pulled up the shore in place of a star to the head of the survey, making just double the distance, as the current was too strong to be pulled against. Altogether, about eight hundred soundings were put in. We found rocks with from 3 to 6 fathoms upon them, and close aboard 11 to 13 fathoms. The rocks seemed to be large boulders, some of them 30 feet high, scattered indiscriminately on the bottom. But a good channel was found 300 yards wide, with 7 fathoms over the whole distance.

Going up, to run this channel a vessel should approach them from the middle of the river, and bringing the western point of Uroa (the one first in sight) directly astern, headed for the point on the opposite bank where the grass meets the clay bank, a point of contact distinguishable at a long distance or on a course.

When the upper end of Uroa Island is well opened on the port bow, the danger is passed. The channel is also distinctly marked by smooth water between the whirlpools.

Going down, abreast the upper end of Uroa, approach the west bank within 600 yards and head for the point of the island below and ahead. The vessel should bring the stern on a line from this point to the end of the clay bank where it meets the grass. Should the railroad be completed, and ocean steamers ascend the Madeira, two buoys placed at the upper and lower ends of channel will make it easy to run.

The repairs to our machinery being completed, the Enterprise dropped anchor, on the 3d of July, to Araras Island, where I had had a lighter sent from Para left for the ship.

The survey of the Madeira, as far as could be performed by the Enterprise, being completed, I awaited the first steamer to ascend the Madeira and join the steam-launch in the survey of the remaining portion to the falls of San Antonio.

During our stay at Uroa Island, from June 21 to July 3, twelve days the river lowered $3\frac{1}{2}$ feet, but later, from July 3 to 22, it fell 7 feet, making a fall of about 10 feet in a month.

On the afternoon of July 4 I went on board the side-wheel steamer *Numan*, Alberto Moraes, captain, bound for San Antonio. The *Numan* was an American-built iron side-wheel steamer, drawing about 12 feet at loaded, and constructed after the pattern of our western river boats, with separate engines. This American type, not found in any

struction is not neglected, a room pointed out to me as a school-room indicated that there was some attempt made to instruct the youth. The mission boasts a town clock, the work of the ingenious friar, the construction of which no doubt helped to increase his influence with the superstitious flock. These Indians live a free, lazy life, while collecting the efficiency of *borracha* and oil of *copaiba* to give them the means of satisfying their love of finery, and the good friar, while attending to the spiritual needs of his flock, does not hesitate to avail himself of his temporal wants by engaging in a little trade on his own account, exchanging their produce in exchange for goods. He seemed to be the person most interested in the stock of goods landed by the Canuman, and the words of the captain, was a "born comerciante."

Above San Pedro the settlers are principally from Bolivia. They live in the vicinity of Trinidad and Santa Cruz, and their haciendas have a comparatively a thrifty look, with large fields of plantains, mandioc, and sugar-cane. These Bolivians have brought and settled near to them numerous Mojos Indians, who are considered as belonging to the family of the proprietor, though they are free and work for hire. There is an understanding that they shall receive so much per day, but the employer has authority to employ them as he pleases.

These Mojos are by far the best type of the laboring class that I have seen on the river. They are strong, industrious, and docile, and the look of neatness about them foreign to the Brazilians of the same class, or domesticated Indians of the Madeira. When our steamer was anchored at one of their places for wood, they would take hold in the most powerful way, and commence wooding without a word, even though it was at night.

The Mojos women struck me very forcibly. Naturally tall, the habit of carrying weights on their heads has given them an erect and graceful carriage. They wear their shining black hair brushed close back and divided in two long braids behind. Their only dress is the *camise*, a simple gown with short sleeves, suspended from the shoulders, and well adapted for easy movements in a warm climate. Assembled often on the bank in numbers as the steamer stopped to wood or land freight, their modest demeanor, neat appearance, and graceful beauty could produce a pleasant impression on the passing stranger.

Above, 130 miles from San Antonio, we pass on the left bank the small village of Crato, next to Borba the oldest settlement on the river, which has fallen into insignificance in its rivalry with Humayta, an ever increasing little place a mile above on the same side.

The latter town contains about 400 people, and its prosperity is due to the energy and wealth of its principal merchant, Signor Manuel Moraes, who ships yearly more *borracha* than any other one person on the river, and also supplies large quantities of fire-wood for the steamers.

Forty-two miles above is the Machado River on the right bank. A branch called the Prieto, 8 miles from the Madeira, is another Indian mission called San Francisco, founded by the government, comparable to the one at San Pedro, of the remnants of different tribes of the Madeira, and is in charge of a friar of the order of the Franciscans. The mission is situated in the country of the dreaded Parintintins, the most savage and warlike of all the tribes of the Madeira. But little, however, of the products of the forest are collected beyond some oil of copaiba, as the domesticated Indians are very much in fear of their more numerous brethren. The friar told me he had made three attempts to trade and intercourse with the Parintintins, but without success. He went to the

wn, six leagues distant, making the sign of the cross as he approached, but, though they offered him no harm, they all left the village, refusing to hold any intercourse with him.

The Parintintins are found about the rivers Machado and Timbuqué, and such is the dread of them, that for 50 miles on the right bank in the vicinity not a habitation is to be seen.

Twenty-three miles above the mouth of the river is Abelhos. An island of the same name divides the river. In high water the channel is to the west of the island, but when the river is half down, steamers must pass through the east channel, which is one of the few dangerous points of the Madeira. The channel opposite Abelhos is full of rocks. Steamers must pass up to the east and at the side of the praia that takes out from the island. When nearly abreast the foot a white clay bank on the opposite or east side will bear about three points on the port bow; cross the river here, heading for it, and it will lead between the rocks. There is a considerable settlement at Abelhos, and large quantities of rubber are exported.

We arrived in the Canuman at Abelhos on the morning of the 11th, and to my surprise I learned that our steam-launch was two miles below, as I had fully expected at this time it would have been at San Antonio. I sent four hundred pounds of coal by a boat which the captain kindly loaned me, and he also consented to wait until the launch came up, which, with the aid of the coal, she finally accomplished. Found that for twelve days, up to the 7th of July, the launch had done finely, making twenty-five miles as a day's run with ease. After this date the boiler gave them a great deal of trouble, and they had been five days making fifty-one miles. The merchant Blocklinger attributed the difficulty to the collection of sediment over the crown-sheet and tubes from the

ter; but that with a coal fire he felt assured he was making sixty miles to San Antonio. I accordingly ordered coal from the Canuman and gave him directions to start. She started in the afternoon just after our departure, and her progress at night was making good progress.

On account of the possibility of the launch breaking down, I took the chronometers on board the Canuman.

At San Antonio, 60 miles, the river is clear of all difficulties. Samandua island. The praia of Samandua is the favorite of the Madeira, and until lately was the resort in August of the natives to hunt for the eggs of the turtle ga Grande, but the turtle by this indiscriminate killing-ground have decreased so much in number as to be unprofitable to seek for their eggs for the making of turtle butter.

At the foot of the lower falls of the Madeira is a point of navigation, 574 miles from its mouth. San Antonio is an insignificant place but for being the starting point of the Funchal Railroad, designed to connect the upper and lower rivers by a railway 180 miles long.

Efforts have been already made to carry out this enterprise, now being made by Messrs. Collins, of Philadelphia, who have been at work since February. They have had great success, on account of indifferent labor and the distance from the base for supplies. They have already completed the first section, and it is my private opinion that the experience, energy of the Collins Brothers will carry it forward, and they are furnished them from the money derived from

the Bolivian loan originally issued for the purpose, and which is now locked up in litigation in the English courts at London.

I remained three days in San Antonio, giving us sufficient time for correct establishment, which is latitude $8^{\circ} 48' 13.6''$ south, longitude $30^{\circ} 55' 05.5''$ west.

Our steam-launch did not put in an appearance, though it had some time, and I felt great uneasiness with regard to her.

I left San Antonio Monday morning, July 15, carrying the survey down myself in the Canuman. The same afternoon we met the steam-launch coming up, and our missing launch in tow. Cast her off, followed her with us to a short distance above Abelhos where the Canuman anchored for the night. Lieutenant Blocklinger reported shortly after losing sight of us on the evening of the 11th, that the steam suddenly dropped from 60 pounds to 10, forcing them to anchor. That they had worked incessantly to clean out the boiler, but without any result, and had finally returned to Abelhos under oars. There was nothing to do but to take the launch in tow, and continue the survey in the Canuman. This I was enabled to do with complete success, through the courtesy of her captain, who offered me every facility. The launch had been put in by the launch on her up trip, and as the Canuman going down kept in the deepest part of the channel, we were enabled to mark this out correctly. Soundings were taken every five minutes, and we had the benefit of the experience of the two excellent pilots of the steamer in locating any rocks or obstructions which had escaped our attention.

At Abelhos occurred the only mishap of the expedition, in the sinking of the dinghy in the rapids, by which most of our remaining provisions and clothes were lost.

We reached Manicoré on the night of July 19. On the way down had been ascertained that the difficulty with the steam-launch did not arise from sediment in the boiler, but from the leaking of the upper feed tubes in the steam-space. Of course the steam escaped as fast as made, though it could not be readily detected except by filling the boiler and putting on a pressure. These tubes were all, therefore, changed, and as the Canuman was to go up the Manicoré River, I left the launch the next morning for the Enterprise, now at anchor at Araras Island, which we reached without difficulty the same afternoon.

During my absence the river had fallen 9 feet. As the survey was now virtually completed, we got under weigh on July 22, and proceeded by easy stages to the mouth, which was reached on the 24th. Here a line was measured, and several important points were established in the vicinity of the junction of the Amazon and the Madeira, which finally completed our work.

It is evident that the weight of the survey of the Madeira fell upon the steam-launch, and it was no small undertaking to go, in this launch, several hundred miles against a strong current. Such an undertaking must necessarily be accompanied with much hardship and personal inconvenience.

Fortunately the weather was good throughout, and the health of the officers and crew did not seem to suffer any from the exposure. Lieutenant Blocklinger is deserving of great credit for the perseverance and energy with which he pushed on, and I was not disappointed in finding him the necessary qualifications for the important position for which I selected him.

Lieutenant Perkins was necessarily entirely occupied with the astronomical determination of the position reached each night, upon the

rectness of which depended the whole value of our survey, and he performed this duty with great credit to himself and to my entire satisfaction.

The bulk of the work during the day fell upon my assistant, Mr. Sparrow, C. E., and this gentleman has been untiring in his efforts to make our work both reliable and complete. The necessity of using deflecting angles from the dumb compass compelled him to give, during the launch's running, an absorbing overlook which would not admit of a moment's respite.

NAVIGATION OF THE MADEIRA.

It would be impossible to give general sailing directions that would be of any practical value. The river is constantly changing, and at all times a person unfamiliar with its course would require a pilot. But the channel line is laid down correctly on the charts made by the expedition, and by a close study of these charts one would very soon be enabled to act independent of a pilot. With the information, for instance, that I could now derive from our charts, I would not have hesitated to have taken the *Enterprise* to San Antonio in spite of the declaration of our pilot that she could not go above the Uroa Rapids.

As a general rule, it may be understood that 6 fathoms can be carried from the mouth to San Antonio from January 1 to June 1. After the latter month the river falls with considerable rapidity, but still 4 fathoms may be depended upon till the middle of July. Between this period and the middle of December the Madeira is not safe for any but river steamers of 6 feet draught, which can navigate it at all periods in the dry season.

While it would be useless, as remarked, to attempt to give any general directions, it will be well to enumerate the few points where navigators should be particularly on the lookout for shoal-water.

The Madeira is divided among thirteen sheets on the mile to the inch. The soundings were taken during , and should be reduced by 15 feet or $2\frac{1}{2}$ fathoms for middle of October. The soundings are in fathoms.

The positions to be carefully sounded:

Upper end of Rosahinha Island; praia to east bank; center.

of island Popeicoca; playa on each side; channel in

upper island dos Ganchos; rocks along west bank; and as depth by lead will permit. Abreast bluffs of el close to west bank; praia extends to middle of

village of Araras and upper end of island; rocks in bank; channel close to island. Upper end of Uroa river; channel in mid-river. (See special chart.)

From Punto Espirio Santo to Casa de Oliviera should of islands de Conepapa, but the one on lower island and should be felt for with lead.

point between Island Iatuarana and Capana, makesposite shore, which must be followed close. Rocks on head of island Bieju-assú; keep in middle of stream; the lead will permit. There are rocks off Manuellos, dangerous at low water.

island Viado; there are rocks at low water on east bank. Keep as close to praia on island side as lead will permit.

No. 9.—Off center of island of Jurara channel is in mid-stream, but

a most excellent field for American capital, enterprise, and productions. But it must be early on the spot, as the merchants of Pará are enterprising and shrewd, and aim at controlling entirely the whole business of the Amazon Valley.

CONCLUSION.

There is little to be added in conclusion to the report. It will have been seen that the Amazon is capable of navigation for the largest class of steamships for a thousand miles from its mouth. That the Madeira River can be ascended by ocean steamers to its falls, or the commencement of the proposed railroad around them, from December to August. That while the immediate vicinity of the Amazon is so low as to be yearly inundated and its soil is not especially adapted for cultivation, the region drained by its tributaries is of a vast amount, with soil of unsurpassed fertility, abounding in wide pampas where roam thousands of cattle, and immense forests of the most valuable woods or furnishing drugs of the highest commercial importance. That though this vast region is watered by great rivers, tributaries to the mighty Amazon, their navigation is totally obstructed by rapids and falls in every case at variable distances from their mouths. That the railroad enterprise around the Madeira, projected and carried on against immense obstacles by American energy and perseverance, would open a rich productive country, in the improvement of which the United States is directly interested, but which latterly British jealousy bids fair to render abortive.

The population of the region bordering upon the Amazon is small. Nature has bountifully supplied them with the necessities of life, and, therefore, their demands for productions of outside nations is not large, but increasing every year.

The manufactures of the United States are held in high esteem; for example, asking once a merchant how our goods compared with those of other countries, he replied, "We like those of the United States the best, because we know they are always good."

It has been shown time and again that the United States is the commercial ally of Brazil. We can furnish everything the country requires, and as cheaply and of better quality than those of Europe. But the entire lack of facilities has turned the channel of trade completely from us. It is estimated that on an average there is at least an arrival of one steamer a day in Brazil from England.

It is vitally necessary, if the United States will take its share of the foreign business of Brazil, to create avenues of trade by which such will flow to our shores.

These are first of all a well-established steam line, with feeders to different ports. Such line must in its infancy be fostered by the government in order to compete with the old established European lines, until the trade directed by them to our country will enable them to take care of themselves.

There should be direct telegraphic communication between the two countries. To the energy of our own countrymen we are indebted for the first successful Atlantic cable, and why cannot one be laid to Brazil?

A bank through which exchanges could be favorably made is also very necessary for the easy flow of commerce.

I would strongly urge upon those American firms that manufacture or sell goods required by Brazil that they should act in concert, and establish sample houses in the important centers of trade. They should be represented by enterprising agents, speaking the language and ac-

ainted with the wants of the country. Such should be encouraged by liberal commissions rather than salaries.

Our products can better be introduced in this manner through native agents than by attempting to establish large concerns in rivalry with them. But especially it must be remembered that steam communication is absolutely necessary first of all, no matter how high and excellent our manufacturing facilities may be.

I have the honor to be, very respectfully, your obedient servant,

THOS. O. SELFRIDGE,
Commander, Commanding

Hon. R. W. THOMPSON,
Secretary of the Navy, Washington, D. C.

REPORT OF THE SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
Washington, November 15, 1879.

SIR: I have the honor to submit the following report of the operations of this department during the past year and such suggestions as in my judgment will promote the public interest:

INDIAN AFFAIRS.

The elaborate report of the Commissioner of Indian Affairs, herewith presented, gives an interesting account in detail of the conduct of the branch of the service in his charge and the condition of the Indian tribes. The difficulties connected with what is called the "Indian problem" have been steadily growing from year to year, as the western country formerly occupied as hunting grounds by Indians exclusively, is required for agricultural settlement and mining industry. In the same measure as white men and Indians more and more jostled one another their contact has been apt to result in collision. We are frequently told that the method followed by our Canadian neighbors in dealing with the Indians is much more successful than ours, and that we should shape our Indian policy after that model. Those who say so seem to forget that the condition of things in the British possessions on this continent has until recently been in an essential point different from that existing in the United States. In the British possessions the Indians occupied an immense territory, full of game, where they have long been permitted to roam at their pleasure, without being interfered with by the progress of settlement. There was comparatively little necessity on the part of the government of providing for the sustenance of the Indians, because they could almost wholly provide for themselves by hunting. Under such circumstances the Indian problem was very simple, and peace was easily maintained. Of late, however, as settlements spread and game becomes less abundant in their Indian country, our Canadian neighbors, if we may believe recent reports, begin to feel that difficulties similar to those we have so long had to contend with, are gradually coming upon them, and that thus they are just approaching the same Indian problem which has been disturbing us for so long a time in various forms. It is to be hoped that they will succeed in solving it

th less trouble than it has brought upon us, but they themselves ar to see reason for apprehension.

Our Indians are scattered over an immense extent of country in tr d bands of different size, with constantly growing and multipl tlements of whites between them. The game upon which form st of them could depend for subsistence is rapidly disappearing ey occupy a number of reservations, some large and some comp vely small, some consisting in great part of fertile lands, some ban any of which were secured to them for occupancy by treaties in t ne by. It may have been, and probably was, a great mistake to m ch treaties with them as distinct nations; but those treaties ade and are entitled to respect. Many treaty reservations have tu t to be of far greater value in agricultural and mineral resources ey were originally thought to be, and are now eagerly coveted by ite population surrounding them. It is argued that the Indians t and will not develop those resources; that the country cannot a maintain large and valuable districts in a state of waste; and erefore they should be thrown open to white people who can and tend to their development. This demand becomes more pressing e ar, and although in many cases urged entirely without regard to ract justice, it is a fact with which we have to deal, and which n taken into account in shaping an Indian policy.

Whatever troubles and perplexities the presence of the Indians an may cause, every man who loves justice and who values the hono e American name will admit that it is our solemn duty to leave n g untried to prepare a better fate than extermination, and a b le than that of brute force for the original occupants of the soil u hich so many millions of our people have grown prosperous and ha at all the Indians on this northern continent have been savages at many of them are savages now is true; but it is also true that n ibes have risen to a promising degree of civilization, and there i ason to doubt that the rest, if wisely guided, will be found capab llowing their example.

It is believed by many that the normal condition of the Indian rbulence and hostility to the whites; that the principal object o idian policy must be to keep the Indians quiet; and that they can pt quiet only by the constant presence and pressure of force. Th i error. Of the seventy-one Indian agencies, there are only el hich have military posts in their immediate vicinity, and fourteen military force within one to three days' march. Of the 252,000 ans in the United States, there have been since the pacification o onx at no time more than a few hundred in hostile conflict with hites. Neither does it appear that such partial disturbances l en provoked by the absence or prevented by the presence of a ry force. Of the four disturbances that have occurred within the 10 years, three broke out in the immediate presence of such a mili

three and only one without it. At this moment a band of less than eight hundred Utes, and another of about one hundred and fifty Indian marauders in New Mexico, in all less than one thousand of an Indian population of a quarter of a million, are causing serious trouble. In fact, the number of white desperadoes who were within the last twelve months banded together in New Mexico for murder and rapine was larger than that of the Indians recently on the war-path near the southern part of the Territory. While I am by no means disposed to belittle the deleterious nature of Indian disturbances or the great value of a military force in suppressing them, it is but just to the Indians to point out the important fact that disturbance and hostility is the exception and peaceable conduct the rule; that a very large majority of Indian reservations are in a condition of uninterrupted quiet without the presence of any really significant experience that the more peaceable the Indians become, the more certainly can its peaceable conduct be ended upon. The progress of civilization and peace among the Indians have always gone

we have no Indian policy. This is a mistake. This is a mistake in the department is concerned.

ing a certain object in view and in employing a certain means to attain that object, then this department is concerned. The policy pursued by it are the following:

work as agriculturists or herders, thus to make them self-supporting. of both sexes, so as to introduce to the growth of wants, and aspirations.

. to Indians in severalty and to give them in fee, inalienable for a certain period, the individual ownership of property instead of their tribe, with its territory held in common.

severalty with individual title is accomplished. It, of those lands on their reservations which are sold to them, the proceeds to form a fund for their use, to relieve the government of the expense of annual appropriations.

and, to treat the Indians like other inhabitants of the Territory under the laws of the land.

and supported by Congress and carried out. It will in my opinion gradually bring about a civilization without injustice to the Indians and also the development of the country. It will raise them at least equal to that of the civilized tribes in civilization, probably to a higher one, considering the stimulus of land. It will not take away from them what equity belongs to them, but induce them to

part with what they cannot cultivate and use themselves, for a fair compensation. It will open to progress and improvement large districts held by Indians, which will then be of no real advantage to them are now to nobody else.

It must be kept in mind that this cannot be done in a day. We frequently told that the tribal relations must be broken up; that reservation system must be abandoned, &c. Whatever is to be the ultimate end and result of the policy stated, it is certain that habits grown up in the course of centuries will not at once yield to a mere word of command. It is equally certain that the introduction of industrial habits, that settlement in severalty, the foundation of permanent homes, conferring of individual title, and thereby the practical individualization of the Indian, must be accomplished first, and in accomplishing these necessary ends the influence of tribal authority has in many, if not in most cases, whenever well taken advantage of, been found of great usefulness in the progress of improvement. An attempt to accomplish these objects at once all over the country, without the intermediate stages of military force, would undoubtedly result in many cases in Indian wars of unprecedented magnitude and bitterness, which would require a much larger army than we at present possess, and prove in the end not only the most inhuman, but in blood and treasure the most expensive of methods. Recent experience has convinced me that all the desired ends can be most successfully reached by watching and improving every favorable opportunity for giving a wise and vigorous impulse and lending a helping hand to the best capacities of the Indians, and that this method will bring about general good results in a shorter time than would be reached by the heroic treatment.

In fact the progress made during the last two years has been greater than might have been anticipated, and it encourages the hope that the ends above indicated may be accomplished in a comparatively short space of time.

One of the peculiar disadvantages under which the conduct of the Indian service labors consists in the circumstance that every mishap, every untoward accident, whether the service be responsible for it or not, at once attract public attention and criticism, the latter sometimes based upon reasoning and by no means based upon a sufficient knowledge of facts, while the good that is done and the success achieved are apt to pass entirely without public notice. Of the results of the policy pursued in this department, I can speak partly from personal observation made on a tour of inspection undertaken a few months ago, and partly from reports furnished by the inspectors and agents in the service.

AGRICULTURE AND HERDING.

There has been much theoretical speculation as to what kind of practical work the Indians are best adapted for. By some men, whose views I claim authority, it is asserted that the natural transition from the sav-

of the savage hunter to that of the agriculturist is the pastoral pursuit, and that therefore the Indian must be made a herdsman and stock-raiser before he can be made a farmer. In theory this sounds well; but in practice it turns out that it cannot be generally applied. The possession of one or two cows does not make a man a herdsman. To make the Indians herders would require large quantities of cattle, so as to give a herd to every head of a family; and inasmuch as they do not possess that large quantity of cattle now, it would have to be furnished them by the government. Moreover, the pursuit of herding furnishes a steady occupation from day to day only to a comparatively very small number of persons. A few young men could attend to the herds of a large number of Indians, and the rest would, in the mean time, remain idle. If occupation is to be furnished to them it must be found in another direction, and that can be only agriculture on a larger or smaller scale. So it is clear that whatever virtue there may be in stock-raising, and however well adapted the Indian in the transition state might be to it, the pursuit of agriculture must necessarily accompany it to occupy the majority of them.

Farming is, of course, first begun on a small scale and in an imperfect manner. A number of Indians engaged in agricultural pursuits, the few who raise products sufficient for their own support and a small surplus for sale, and the aggregate quantity and value of these products are probably larger than is generally understood.

For details I refer to the elaborate exhibit contained in the report of the Commissioner of Indian Affairs.

The general progress of agricultural pursuits among the Indians, may be stated that according to the statistics furnished to this department the Indians on reservations have under cultivation 157,056 acres; 4,270 acres have been broken this year by Indians themselves. A larger area would have been added but for the extraordinary drought which in 1880, especially in the Indian Territory, impeded agricultura-

tion. The crops raised by the reservation Indians this year amount to 1,000,000 bushels of wheat and 643,286 bushels of corn, 189,654 bushels of oats, 30,698 bushels of vegetables, such as potatoes, turnips, and 1,000 tons of hay cut. In addition to this, 4,677 acres and 2,861 broken on the government farms at the various agencies for the benefit of the Indians, in part by Indian labor. The crops from these farms amounted to 15,232 bushels of wheat, 17,023 bushels of oats and barley, 11,925 bushels of corn, and 4,698 tons of hay cut. This exhibit of products and crops by Indian labor does not include the five civilized tribes in Oklahoma, the Chickasaws, Choctaws, Creeks, and Seminoles, who cultivated 237,000 acres, and whose products are stated to be 1,000,000 bushels of wheat, 2,015,000 bushels of corn, 200,500 bushels of oats, 336,700 bushels of vegetables, and 176,500 tons of

ies recently established in Southern Dakota was themselves. The department furnished wagoners their ponies as draft animals. A shout of approval from Upper Missouri greeted the experiment. A disaster was predicted by those interested in the freight business. But not only did the Sioux succeed in carrying freight during an uncommonly hard winter, taking it over the plains without roads, a distance of 90 miles from the river, but they have proved the most reliable freighters the Indian service ever had as yet; although the Indian freighters, occasionally overcome by extraordinary difficulties on their wearisome journey without provisions, not a cracker box nor a pot of meat.

In the course of the year Indian freighting has been carried on at a large majority of the agencies this side of the Rocky Mountains. It is done as uniformly with the same success. There are no white Indian teamsters in that occupation, and they do it more honestly, more faithfully, and far more economically than it ever was done for this department by white men. The difficulties connected with the giving of bonds to Indians have been removed, and the condition to have the Indians make bids for work on other branches of the public service. The introduction of Indian freighting has not only been a great success, but it has given a powerful impulse to the desire to work and to the desire to learn among the Indian tribes that have been so employed. It has been so successful at all the agencies where it is practicable.

Indians in the mills and workshops on the agencies have also had equal success. In some of our grist and sawmills, and in the blacksmith shops, saddler shops, and other workshops at the agencies 185 young Indians are instructed, and the number is being constantly increased. Some of the agencies are now controlled by Indians as foremen and teamsters, and as laborers in a variety of other ways has been found to be successful. On Indian reservations where suitable clay is found, the building of brick yards to be worked by Indians is contemplated. On the Sioux reservations the Indians are engaged in putting up telegraph lines, and the work for Indians by white contractors has been abundant. The Indians are now constructing their houses themselves, with their own hands, and the planks, the latter sawed in the mills on the agencies, are given to them. The old Indian prejudice that it was wrong to do anything else than hunt and fight, and that the only way to get rich was by war, is being rapidly and very generally overcome. This direction is indeed unequal on different reservations, but it has been made almost everywhere and at many

gencies it has been very great and surprisingly rapid. Only in rare cases was any unwillingness or resistance shown by the Indians, and it is reasonable to expect that if the present system be pursued with patience, attention, and energy, results still more satisfactory and valuable will be attained.

EDUCATION.

The education of Indian youth has been the subject of special solicitude, and I am very glad to record the fact that our efforts in this respect have been encouraged in a multitude of instances by exhibiting an urgent anxiety, even among the so-called wild tribes, on the part of Indian parents to have their children instructed in the ways and habits of civilized life, and especially in the English language. It is the policy of the department that mere day-schools, however well conducted, do not withdraw the children sufficiently from the influences, habits, and traditions of their home-life, and produce for this reason but a comparatively limited effect. The establishment of boarding-schools or reservations for elementary and industrial instruction has therefore been found necessary, and as far as the means appropriated for educational purposes permit, this system is being introduced. In these schools children of both sexes are instructed, not only in the rudiments of knowledge and the English language, but also in the various branches of domestic industry. The number of children attending school in uncivilized tribes was 6,229 last year; this year it is 7,198. In the civilized tribes in the Indian Territory it was last year 5,993, and this year. While thus progress is evident, yet my own personal observation has convinced me that many of the schools at the agencies are not as efficient in their working as they should be, and their improvement will be the subject of special care.

In my last annual report I mentioned the experiment made by the department during the preceding year in sending fifty Indian boys and girls selected from different tribes to the Hampton normal and agricultural institute in Virginia, to receive an elementary English education and also practical instruction in farming and other useful work. Under the wise and energetic guidance of Mr. Armstrong, the principal of Hampton school, this experiment has led to very gratifying results. The progress made by the pupils in the acquisition of knowledge of the habits and occupations of civilized life was of course unequal, but in all cases satisfactory and in some remarkable. During the summer vacation many of the youths were sent singly to farmers in the Eastern States, and their conduct, so far as I have been informed, in all cases been favorably reported upon. A personal inspection of Hampton school satisfied me that the number of Indian pupils could be advantageously increased, which increase has been proposed. The success thus gained seemed to justify the extension of the experiment, and the Secretary of War, with a willingness for which I desire to express my grateful acknowledgments, consented at my request

turn over to the Interior Department the military barracks at Carlisle, Pennsylvania, no longer used by the army, for the establishment of an Indian school on a larger scale. Captain Pratt, who had already rendered valuable services to the cause of Indian education in Florida and Hampton, was sent by this department to the various Indian agencies to select children of both sexes for the Carlisle school, and he, aided by Miss F. A. Mather, of Massachusetts, a lady of great merit, performed this task with energy and judgment. One hundred and fifty-eight Indian boys and girls, Sioux, Bannocks, Kiowas, Comanches, Cheyennes, Arapahoes, Poncas, and Nez Percés, mostly the children of prominent men of their respective tribes, have been taken to Carlisle Barracks, and the school is now in full operation. Arrangements are also made to have a number of Indian boys and girls belonging to tribes on the Pacific slope educated in like manner at Forest Grove, in Oregon. Their number will be increased as soon as sufficient means and accommodations can be found. If this experiment proves successful, of which there seems to be a very hopeful prospect, other public buildings not otherwise used should be placed at the disposal of this department for the same purpose. In my opinion the withdrawal of as large as possible a number of Indian youths from the influences of their more or less savage home surroundings for their education and training in useful knowledge and arts in the very atmosphere of civilization, and after a few years so spent their return among their people as teachers and examples can hardly fail to produce a salutary effect upon the whole Indian population. It has frequently been said that young Indians so educated will, after their return, speedily lapse into the barbarous habits of their tribes and leave these acquirements unused. This might have been the case when a young Indian of this description found himself with those acquirements in the midst of his people solitary and alone, without sympathy and co-operation. But it will not be apt to happen if each tribe or band has in it a larger number of young men and women so educated who can lean upon and co-operate with one another and take advantage of that desire for education which now appears to be found among the Indians generally. It seems, therefore, important that the number of pupils at these schools be increased as much as possible.

Several Indian chiefs whose children are at Hampton and Carlisle have expressed a desire to visit those schools next spring and to bring their wives with them for that purpose—a sort of Indian visiting committee. It is thought that such a visit will be calculated to do much good, and it will therefore be encouraged within proper limits.

So far the policy above stated could be carried out with the means granted to this department. But other things equally important could not be done by this department without further essential legislation which has been repeatedly recommended to the consideration of Congress, but, I regret to say, without success.

and suitable police regulations for the government reservations, and to provide for the enforcement of the respective States and Territories in which located, relative to certain crimes, shall be deemed and in force within such reservations, and the United States within and for the respective districts and courts of the respective Territories, in which located, shall have original jurisdiction over all offenses within such reservations; 3. That in respect to Indian Territory not occupied by any of the five civil States of the State of Arkansas relative to certain offenses, and taken to be the law and in force therein, the district court for the western district of Arkansas shall have original jurisdiction over all such offenses arising in Indian Territory; and, 4. That the place of punishment for such offenses shall be the same as for other offenses within the jurisdiction of said respective courts. The bill reported upon by the Judiciary Committee of the House of Representatives, but no action was taken thereon. In view of the importance of the subject, I earnestly recommend that it be urged upon Congress at the present session.

THE INDIAN POLICE.

The police force consisting entirely of Indians, begun some years ago, has been extended to almost all the agencies, and is very salutary and effective in the maintenance of order and protection of property. The police has throughout shown great zeal in executing the directions given by the Department. It is essential that for this force young men of good habits, and respectable standing in their communities, and whose rule has been invariably observed. Consideration of such selections is found in the circumstance that the compensation provided by Congress for these policemen is not a high one, the reason that the class of men needed by the Government would, if not so employed, earn a much higher wage for their own benefit. I earnestly concur in the recommendation made by the Commissioner of Indian Affairs that the number of policemen be sufficiently increased to enable them to be of service to the government without loss to themselves, and I hope to keep the proper class of men in this

ARMS AND AMMUNITION TO INDIANS.

Whenever an outbreak occurs the question is asked where the arms and ammunition. For many years no arms have been furnished by the government, except to those who were

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the government's service as scouts or policemen. By the present administration of Indian affairs the Indian traders, as well as all others on Indian reservations, have been strictly prohibited to sell ammunition to the Indians, and that prohibition has been rigorously enforced. The only way in which Indians can obtain fire-arms and ammunition is by purchase from persons outside of the reservations, in which the Indian service has no control. There is nothing in the legislation prohibiting this obnoxious trade except a joint resolution passed by Congress in November, 1876, authorizing and requesting the President "to take such measures as in his judgment may be necessary to prevent metallic ammunition being conveyed to hostile Indians in the Northwest and to declare the same contraband of war in such parts of country as he may designate during the continuance of hostilities," and a proclamation of the President issued in pursuance thereof prohibiting the sale of fixed ammunition in any district of the Territory occupied by hostile Indians or over which they roam, and declaring all such fixed ammunition introduced into such country and liable in any way to be received by such hostile Indians contraband of war, and to be seized by any military officer and confiscated"; this prohibition to continue during the continuance of hostilities "to all Indian country, or country occupied by Indians or subject to their visits, within the Territories of Montana, Dakota, and Wyoming, and the States of Nebraska and Colorado."

It is evident that this prohibition, in which the sale of arms and ammunition is mentioned at all, is confined to the sale of fixed ammunition only during the continuance of hostilities in certain districts, when such fixed ammunition shall be seized and confiscated by military officers, and does not prevent the sale of arms and ammunition in any quantity to Indians on the reservations, where the Indian service has no authority. Indians are at all times, entirely free. If this trade is to be stopped, a more complete and sweeping statute is absolutely required.

THE INDIAN TERRITORY.

Last spring a movement was organized in some of the Western States for the invasion and occupation by unauthorized persons of certain portions of the Indian Territory, which had been ceded by the Cherokee and Creek Government for the purpose of settlement by other Indian tribes. A large number of people, mostly from the States surrounding the Territory, were discovered in the act of entering the Territory for the purpose of the object stated. On the 20th of April last the President issued a proclamation warning all persons who were intending then to enter the Indian Territory against attempting to settle on any lands there, and threatening those who had already so offended, that they would be removed, if necessary, by military force. At the same time corresponding instructions were given to the Army, and with the diligent assistance of

military force in the Territory the invasion was speedily checked and the intruders removed.

While this was accomplished with comparative ease, owing to the promptness and vigor of the interference by the government, which repressed the mischief in its incipency, it must be admitted that had the information which caused proper measures to be taken, in any way been delayed, or had any time been lost in acting upon it, the invasion of the Indian Territory, as planned, might in the mean time have assumed such proportions as to make its repression a matter of extreme difficulty. There is no doubt that many people in the Western States and Territories are eagerly watching every possible chance to obtain possession of the fertile lands of the Indian Territory for purposes of settlement as well as will require the utmost watchfulness on the part of the government to prevent lawless attempts to wrest from the Indians their lands guaranteed to them by treaty. This watchfulness is a constant task, but it is also probable that the performance of this duty will become more difficult every year as the western country is more densely occupied.

When visiting the Indian Territory this autumn I deemed it proper to call the attention of the representative men of the civilized tribes to whom I met at Muskogee, to this circumstance. I assured them that this Administration would meet any repetition of the lawless attempt witnessed this year with the same energy and fidelity, and I had no doubt it would be met with the same success; but that the difficulties of protecting the integrity of the Territory might in the course of time increase beyond control; that it would be wise for them to consider and provide for this emergency; that in my opinion the best thing they could do for themselves would be to divide their lands among their people in severalty in such lots as they might think best; to obtain individual title in fee like white men; and every member of their tribes being thus provided for, to consider how the rest of the lands not occupied and cultivated by themselves could for their benefit be disposed of to other settlers, so that if they did not keep those lands themselves they would at least secure their value in money; that an individual title to lands acting by them would be under all circumstances safer to them than communal title without individual fee; that the individual ownership would also be calculated to stimulate their progress and improvement. As their friend I advised them to take this matter into consideration while under the assured protection of the government, and to be perfectly free to do so; that if they acted upon such advice the government would find itself far better able to secure to them their lands than it would be to maintain the present state of things. In the future day the flood of immigration should sweep over the surrounding States into the Indian Territory, finding no barrier to its progress.

Providing their lands among them in severalty is probably the best mode with a majority of the members of the civilized tribes.

the Territory, but it is to be hoped that this important question ought to their attention will be taken up by them for discussion and serious consideration.

THE WHITE RIVER UTES.

The history of the outbreak on the White River Ute Reservation in eastern Colorado is given at length in the report of the Commissioner of Indian Affairs. The Utes are one of the very few tribes of Indians who still find on and around their reservations game enough to enable them to live on hunting or to make hunting a profitable business. One of the reasons why they are less inclined to engage in occupations which require real work. On the borders of the Ute Reservation are trading establishments carried on by white men who have made it their business to advise the Utes against going to work and encouraged them to devote themselves exclusively to the pursuit of hunting as of old. At these traders might have the benefit of profitable traffic in furs with them for which they paid the Indians in various goods, arms, blankets, and whisky. These traders being outside of the reservation the officers of the Indian service had no control over them, and as they seduced the Indians to their establishments by all sorts of allurements they made it extremely difficult to the agents to keep the Indians in proper discipline. The Indians therefore strayed off on all possible occasions, deeming it prudent to spare the game on the reservation they made their hunting excursions over the adjacent country, especially North and Middle Park, to the annoyance of the settlers. They have, in some instances, set fire to the grass and timber for the purpose of destroying the game, and hence the devastation of several timber districts in eastern Colorado may be ascribed to them. I have, however, many reports before me which show that a majority of the forest fires in Colorado are not attributable to the Indians but to white hunters, explorers, and tourists who are almost uniformly in the habit of carelessly leaving their camp-fires burning when they go from one place to another. The hunting expeditions of the Indians in North and Middle Park have caused frequent complaints on the part of settlers, and for more than twenty years a correspondence has been going on between this department and military authorities about the practicability of locating a military post in the neighborhood of the White River Reservation for the purpose of preventing the excursions of the Indians beyond their borders. This correspondence led to no result, General Pope insisting that it was better to remove all the bands of the Ute tribe to a consolidated reservation farther to the south, while General Sheridan expressed his opinion that an attempt to remove the Utes from their old hunting grounds, especially without their consent, would inevitably result in a Indian war. Both agreed, however, that they had not troops enough at their disposal to establish a new post near the White River Reservation to check the complaints of the settlers, of the governor of Colorado, as well

of Agent Meeker, who had applied for military aid in keeping the Indians on the reservation, growing louder, the matter was referred in July last to Major Thornburgh, commanding at Fort Steele, for report. Major Thornburgh reported that the complaints about outrages committed by the Indians outside of the reservation were untrue; that the Utes had been merely on a hunting expedition but had harmed nobody, and "that he had never received any orders from his superiors to cause the Indians to remain on their reservation at the request of the agent, but was ready to attempt anything required of him."

Then occurred the difficulty between Agent Meeker and some of his Indians in consequence of the plowing of a certain piece of land, the assault upon the agent, Mr. Meeker's request for troops to restore order and to arrest the offenders, the advance of Major Thornburgh's command upon the reservation, the fight in which Major Thornburgh and some of his men were killed, the massacre of Agent Meeker and the agency employés, the valiant defense of the surrounded troops under Captain Payne, the heroic feat of Captain Dodge and his company of colored cavalry, the splendid march of General Merritt for their relief, the advance to the agency and the sudden retreat of the Indians, as set forth in detail in the report of the Commissioner of Indian Affairs.

The attack upon Major Thornburgh had become known to the head chief of the Ute tribe, had sent his orders to the Utes to cease fighting, and to retreat before the military department received information of this fact on November same day I instructed Charles Adams, esq., of Colorado, a Post-Office Department, who at my request was, by the Postmaster-General, detailed for temporary service in it, a gentleman known by me to be well acquainted with and to possess their confidence, to proceed as a special agent to the Pinos Agency and to put himself in communication and eventually with the White River band of Utes. The object to be accomplished was twofold: first, to effect the liberation of the children of Agent Meeker and his employés whom he had carried with them as captives; and, secondly, to urge upon the White River Utes to surrender those of their people involved in the attack upon Major Thornburgh and Agent Meeker and his employés. Mr. Adams acted upon this task with an intrepidity and judgment worthy of the occasion.

He found in Chief Ouray a loyal and energetic man; he went personally to the camp of the White River hostiles where the captive women and children were given up; he proceeded to General Merritt's camp on White River to him what had happened and what he still hoped to accomplish; there he returned by way of the hostile camp to confer with Ouray. As soon as the report of the liberation of the captive women and children was received by this

he was an innocent man, an impression confirmed by information received from Washington Territory, especially from military officers, it was agreed that he and his people should occupy a tract of land adjoining the Colville Reservation in Washington Territory, set apart for them by executive order. The delegation then returned to Washington Territory, and it required special precautions on the part of the department commander, General Howard, and the governor of the Territory, to have them safely conveyed to their new place of abode.

The murder case in which Moses had been charged with complicity has since been tried, and, while three Indians were convicted of the crime, Moses was found entirely guiltless.

There never was any trustworthy information in the possession of this department to justify any suspicion as to the conduct or intentions of this Indian chief. On the contrary, he is known to have rendered good service during the Bannock trouble in maintaining peace and good order among the Indians under his influence. But the efforts to save his life or at least his liberty, or to drive him into hostilities, appeared to be so persistent that it required the most watchful and active interposition on the part of the government to prevent a conflict. On several occasions I requested the governor of the Territory to give his personal attention to this matter, and to him, as well as to General Howard, I have to express my acknowledgments for prompt and effective co-operation with this department in the measures taken to effect a peaceable solution of the difficulty.

At present Moses and his people are on their reservation, but this department is informed that new attempts are made to draw them into trouble, which attempts, it is hoped, will result in failure.

THE PONCAS.

That the Poncas were grievously wronged by their removal from their location on the Missouri River to the Indian Territory, their old reservation having, by a mistake in making the Sioux treaty, been transferred to the Sioux, has been at length and repeatedly set forth in my reports as well as those of the Commissioner of Indian Affairs. All that could be subsequently done by this department in the absence of new legislation to repair that wrong and to indemnify them for their losses, has been done with more than ordinary solicitude. They were permitted to select a place for themselves in the Indian Territory, the Quapaw Reserve had first been taken, being objectionable to them. They were located on the Arkansas River and the Salt Fork north-branch of the same. I visited their new reservation personally to see their condition. The lands they now occupy are in the Indian Territory in point of fertility, well timbered and admirably adapted for agriculture as

In this respect their new reservation is unquestionably better than that which they left behind them on the Missouri

iver. Seventy houses have been built by and for them of far better quality than the miserable huts they formerly occupied in Dakota, and the construction of a larger number is now in progress, so that, as recent reports, every Ponca family will be comfortably housed before January. A very liberal allowance of agricultural implements and stock has been given them, and if they apply themselves to agricultural work there is no doubt that their condition will soon be far more prosperous than it has ever been before. During the first year after their removal to the Indian Territory they lost a comparatively large number of the people by death in consequence of the change of climate, which is greatly to be deplored; but their sanitary condition is now very much improved, the death rate among them during the present year has been very low, and the number of cases of sickness is constantly decreasing. I am confident that they are now sufficiently acclimated to be out of danger.

About the 1st of May last "Standing Bear," a chief of a band, with some twenty Indians, left the reservation in the Indian Territory to return to the Missouri River. As has always been done in similar cases, they were arrested at the request of this department to be taken back to their reservation. Application was made by citizens of Nebraska to the United States court at Omaha for a writ of *habeas corpus*, which was granted by the court, and Standing Bear and his followers were restored to liberty. Efforts have been made in various places to raise a subscription for the purpose of testing in some way the question whether Indians, by governmental action, be removed from lands once confirmed to them by treaty, and whether they can be arrested and returned to a reservation on which they have not by treaty bound themselves to remain. It would, perhaps, be well to have the rights of Indians defined and fixed by judicial decisions; but I do not think that, as seems to be believed by many people, such decisions will "solve the Indian question." The solution of the Indian question depends upon the civilization of the Indians and their ability to take care of themselves, to which "the definition of the Indians' rights" will probably contribute but very little. If judicial proceedings should result in spreading among the Indians the impression that they can leave their places of abode and roam about at pleasure, the effect would only be disastrous to them. If, for instance, the scheme which has been publicly advertised, to induce the Poncas to send emissaries sent among them, to leave their present reservation, with their houses and other improvements, where they are rapidly becoming civilized, and to return to Dakota, where all this work would have to be done anew, should be carried out, it would probably injure only the Poncas themselves. This department has done all that was in its power to indemnify the Poncas for the wrong done them. No tribe of Indians has been more liberally cared for and provided with everything that would make them comfortable and prosperous. If all this should now be taken away, and they be obliged to start afresh, it would be a matter for great consideration whether the injury to them would not be much greater.

REPORT OF THE SECRETARY OF THE INTERIOR.

than a mere vindication of a right to a piece of land on the Miss River could possibly remedy. Whatever might or should have been done, while their removal to the Indian Territory was still an open question, their present condition should not be left out of view in determining what is to be done now.

I have been informed on good authority that emissaries have also been present among the Sioux in Southern Dakota, who are now contented, and have made a very hopeful beginning in doing useful work for themselves for the purpose of "teaching them their rights," and inducing some of them to withdraw themselves from the authority of the government, and leave their reservation so that another "test case" may be made. Such schemes are mischievous and reprehensible, and should be countenanced and resisted by all well-meaning citizens. If they are set on foot in the name of philanthropy, it is a philanthropy most hurtful to those it pretends to benefit. True philanthropy will use every effort to accomplish that which is really best for the Indians, to make them who are well settled stay quietly where they are, avail themselves of the means offered for their improvement, cultivate their fields and take good care of their stock, devote themselves to useful work, send their children to school, and submit to the discipline which is necessary for their advancement in civilized life. This will be better for the Indians than an agitation calculated to divert their minds from that which is really needful.

GENERAL CONCLUSIONS.

On the whole, it may be said, notwithstanding the isolated disturbances which have occurred in Colorado and New Mexico, that the general temper and disposition of the Indians as to their willingness to work and abandon the ways of savage life has greatly changed for the better. I do not mean to say we shall have no further trouble, but there is abundant evidence that at present the government possesses the confidence of the Indians in a greater measure than for a long time past, and that the directions issued by the government are far more generally received and obeyed than in the past. We must not expect of them more than in the nature of things they are capable of doing. They must be treated not only with justice but also with patience. It may be necessary to repeat to some of them the same lesson again and again before they comprehend it, which requires persevering as well as intelligent work. But the progress made by some of the wildest tribes within my own official experience is most encouraging. When I entered upon my present duties I was told by men of long experience in Indian affairs that we would never be able to do anything with the Spotted Tail and Red Cloud Sioux "until they had received another thorough whipping." Since that time they have twice been obliged to change their location. A general outbreak was predicted a year ago. When I visited them in the autumn I found their freighting wagons by hundreds on the road and their young warriors on the box, their chiefs with their people making

hay and cultivating fields on the bottom lands, many of them build houses for their families; anxious to have their children educated; many requesting that their boys and girls be taken to our schools in the East, and the universal wish to be permanently settled and led on "in the white man's way." Only one slight disorder interrupted their general good conduct. Similar things may be said of many other tribes. The rapid disappearance of game, which is to them a blessing in disguise, will greatly facilitate the introduction of civilized pursuits among several tribes who at present still prefer hunting to regular work. There is good reason to believe that if Congress will aid the carrying out of the policy above indicated, the enactment of legislation essential to its success, and if the citizens of the West will make up their minds to it that the Indians must have at least some land worth cultivating, we shall in another year make another long step toward that solution of the Indian problem which consists in so settling the Indians that they may become self-supporting, and that their presence among us will cease to be a disturbing element in American society.

In justice to the Indian service as at present constituted, I feel it my duty to say, that while it has been found necessary for the reformation of abuses to visit severe punishment not only on grave violations of duty, but even upon minor irregularities, and thus to make many removals and changes, such delinquencies have grown steadily less in number as well as gravity, and are now of very rare occurrence. Complaints formerly so frequently heard, whether justly or unjustly, that supplies and annuity goods appropriated for by Congress and purchased for the Indians by the Indian Office, were not delivered to them, or that such goods and supplies were of bad quality, have almost entirely ceased.

It is a pleasant duty to acknowledge the valuable services rendered by the Board of Indian Commissioners in supervising the making of contracts and purchases, as well as the harmonious and effective co-operation of the War Department and the military authorities on all occasions when their assistance was requested.

PUBLIC LANDS.

The report of the Commissioner of the General Land Office gives an abstract of the operations of his office under the laws relating to the survey and disposal of public lands during the year ending 30th June, 1879.

During the year ending 30th June, 1879, public lands were disposed of as follows:

For cash.....	Acres 692,577
A decrease of 254,981.18 acres, as compared with the previous fiscal year.	
Of this quantity 165,906.53 acres were entered under the desert-land act.	
Under homestead laws.....	5,260,111
An increase of 841,766.37 acres, as compared with the previous fiscal year.	
Under timber-culture laws.....	2,703,577

	Acres.
An increase of 896,133.73 acres, as compared with the previous fiscal year.	
Agricultural-college scrip locations.....	980.00
County-land warrant locations.....	50,820.00
A decrease of 33,900 acres as compared with the previous fiscal year.	
State selections:	
School indemnity.....	85,474.65
Internal improvements.....	81,400.46
Agricultural colleges.....	680.00
Salt springs.....	18,836.62
	<hr/> 186,391.73
A decrease of 22,600.80 acres as compared with the previous fiscal year.	
Scrip locations:	
Sioux half-breed scrip.....	1,879.06
Chippewa half-breed scrip.....	640.00
Valentine scrip.....	1,417.70
Porterfield scrip.....	240.00
Cole scrip.....	480.00
	<hr/> 4,656.75
Scrip located under acts of June 2, 1858, and June 22, 1860.....	67,573.44
An increase of 4,429.34 acres as compared with the previous fiscal year.	
Under the swamp act.....	75,388.06
A decrease of 127,537.77 acres.	
Certified for railroad purposes.....	276,334.11
A decrease of 328,006.54 acres.	
Total.....	<hr/> 9,333,383.29
A quantity greater by 647,204.41 acres than that disposed of the previous fiscal year. This increase is largely due to the greater quantity taken under the homestead and timber-culture acts.	

The cash receipts were \$1,883,113.56, a sum less by \$139,418.60 than that received the previous fiscal year.

During the fiscal year 8,445,781.64 acres of public lands were surveyed, and 1,039,214.26 acres of private land claims, a quantity of public lands greater by 414,760 acres than that surveyed the previous year. The entire quantity surveyed is 734,591,236 acres, leaving of the public domain yet to be surveyed 1,080,197,686 acres.

The report of the Commissioner recites the appropriation for the survey of public lands and private land claims, and the distribution of the appropriation among the sixteen surveying districts. It also contains the report by the surveyors-general of surveying operations in their respective districts, and the statement that the boundary line between Colorado and Utah Territory has been surveyed and marked.

The applications for certified copies of patents, papers, &c., have greatly increased. As the compensation received for such copies under the law must be turned into the Treasury, the Commissioner suggests an amendment, so that the moneys received for such copies may be made applicable for the payment of copyists employed upon the work. He suggests that abandoned military reservations that are found to

ing trial, which will, when judgment is obtained, very much increase the amount already recovered. The details are presented in the report of the Commissioner of the General Land Office. The prosecution of depredators on the public timber lands has, therefore, been a well-paying business to the government.

It is, however, the least important result of the operations of the department in this respect. Of far greater consequence is the fact that investigation of trespasses and the prosecution of depredators, carried out with vigor and earnestness, although with very limited means, have resulted in some of the localities where the depredations had been most extensive, a wholesome respect for the law, and strengthened the desire of the citizens, who have the interests of the country at heart, to see the unlawful destruction of the public timber cease. It is indeed gratifying to observe that the interest in this important question which the measures adopted by the government have awakened, and the discussions which have followed, have greatly weakened the opposition which existed at the beginning to the policy pursued by this department. Even in the States and Territories where the timber necessary for domestic and commercial purposes can be obtained only from the public lands, unless imported from a distance, a healthy public opinion seems to be springing up which recognizes that an indiscriminate destruction of the forests, and especially the denudation of the mountain slopes of the timbered lands covering them, must inevitably result in incalculable and irreparable injury to the economical interests of those States and Territories. It has become ultimately destructive to the prosperity of their people. This is an observation which by painful experience has forced itself upon the minds of every civilized nation on earth; and it is to be hoped that the American people will become mindful of it while it is yet time to remedy the evil already wrought by the reckless improvidence which has so far prevailed.

While the measures taken by this department have undoubtedly produced a good effect in many localities, it must be kept in mind that the limited means allowed by Congress permitted only a comparatively small field to be covered by its operations. The greatest danger of depletion of our forests, and of the disastrous consequences which will bring after it, exists in those States and Territories where a large and indispensable quantity of timber is required for domestic use and local industries. In these States, where the timber is obtained from the public lands, there being no timber on private lands, the public lands being mostly unsurveyed, and the public lands being mostly unsurveyed, it is difficult to purchase or entry.

In my report I discussed the inadequacy of the laws enacted in 1879 "authorizing the citizens of Colorado, Nevada, and Oregon to purchase and remove timber on the public domain for mining purposes," and providing "for the sale of timber lands in the States of Colorado, Nevada, and Oregon and in Washington Territory." The report further expressed, that the first of these acts would be

public lands. It is a matter of experience that such fires on the public lands of the Western States and Territories are sometimes set by Indians, but in a majority of cases by hunters, mining prospectors, and tourists who negligently leave their camp-fires burning when moving from place to place, as well as by persons who deliberately set timber on fire for the purpose of deadening and thus preparing it for particular use. It is said that larger areas of timber land are devastated by such fires than by all other kinds of depredation, and this is probably true. I therefore repeat the recommendation made in my first annual report, that a law be enacted prescribing a severe penalty for the willful or negligent setting of fires upon the public lands of the United States, and also for the recovery of all damages thereby sustained. It may in many cases be difficult to obtain the testimony necessary for the conviction of persons guilty of this offense; but if the law is successfully enforced only in some instances, it will serve to direct general attention to the danger to which any one who willfully or negligently sets fire to public timber exposes himself, and thus to make many persons, who so far have given no thought to the possible consequences of their negligence or recklessness, think of the future.

I repeat the recommendation made in former reports that I am authorized to appoint a commission, composed of qualified persons, to study the laws and practices adopted in other countries in relation to the management and cultivation of forests, and to report to Congress on the subject, applicable to our circumstances. The time has not yet come when forest-culture will be to the people of the United States as important a question as it is in older countries; and then it will be a matter of painful wonder to thinking men, how it could have been neglected.

REDWOOD AND BIG TREES OF CALIFORNIA.

The waste and destruction of the redwood (*Sequoia sempervirens*) and the "big trees" (*Sequoia gigantea*) of California have been and continue to be so great as to cause apprehension that these species of trees, the noblest and oldest in the world, will entirely disappear unless some measure be soon taken to preserve at least a portion of them. I am informed that in the more inaccessible sections of the coast range in the northern part of California, on the west side of the Sierra Nevada Mountains in the southern part of California, some forests of these trees still remain, that may be preserved, either wholly or at least in part. The importance of preserving these species of trees in sufficient quantity to serve as an illustration of the magnificence of the primeval forests, is so great as to have attracted the attention of men of science in both Europe and America, from some of whom I have received communications on this subject. It is especially desirable that the big trees in the above named localities be preserved, as the "Mariposa Grove" now celebrated for

specimens of that species, is small and many of the large trees in it injured by fire.

I would therefore recommend that the President be authorized to withdraw from sale or other disposition an area at least equal to two townships in the coast range in the northern, and an equal area in the southern part of the State of California, the precise form and location of the tracts to be determined at his discretion.

PRIVATE LAND-CLAIMS.

In each of my annual reports I have called your attention to the necessity for legislation by Congress, providing a way for the speedy settlement of the private land-claims in the territory (especially California) acquired from Mexico by the treaty of Guadalupe Hidalgo in 1848, and the Gadsden treaty of 1853, than is now provided by law.

The reasons for asking such legislation are—

First. The slow progress made under existing laws in the settlement of said claims.

Second. The large number of claims still remaining unsettled, covering large areas of land which interfere with and retard the sale and disposal of the public lands.

Third. The want of harmony between the land system of the United States and the system under which said grants were made, which engenders strife and conflict between the land claimants and settlers.

No law has thus far been enacted by Congress to provide a way for the speedy settlement of such claims since I first called your attention to the subject, although several bills have been introduced looking to that end.

All of the reasons to which I have heretofore invited your attention still exist, and the rapid settlement of said territory, both for agricultural and mining purposes, has greatly intensified the necessity for a law.

GEOLOGICAL SURVEY.

Under the provisions of an act of Congress approved March 3, 1879, the Geological and Geographical Survey of the Territories, and the Geographical and Geological Survey of the Rocky Mountain Region, hitherto conducted under the supervision of the Department of the Interior, were discontinued on the 30th of June, 1879. The office of Director of the Geological Survey was established by the same act, and \$100,000 were appropriated for the expenses of said survey and for the classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain, to be expended under the direction of the Secretary of the Interior.

In accordance with the provisions of the act, the President appointed by and with the advice and consent of the Senate, Mr. Clarence King, a gentleman eminently qualified, to conduct the survey. No report has yet been made of his operations in the field; but advices received indicate a season of successful labor and satisfactory results.

PUBLIC LANDS COMMISSION.

The act of March 3, 1879, authorized the appointment by the President of three persons, to form, in connection with the Commissioner of the General Land Office and the Director of the Geological Survey, a commission on the codification of existing laws relating to the survey and disposition of public lands. It was made the duty of the commission to report to Congress within one year from the time of its organization: First, a codification of the present laws relating to the survey and disposition of the public domain; second, a system and standard classification of public lands, as arable, irrigable, timber, pasturage, swamp, coal, mineral lands, and such other classes as may be deemed proper, having due regard to humidity of climate, supply of water for irrigation, and other physical characteristics; third, a system of land parceling surveys adapted to the economic uses of the several classes of lands; and fourth, such recommendations as they may deem wise in relation to the best method of disposing of the public lands of the western portion of the United States to actual settlers.

The following named gentlemen were appointed as members of the commission July 1, 1879: J. W. Powell, A. T. Britton, Thomas Donaldson. The commission, consisting of the above named, together with the Commissioner of the General Land Office and Director of the Geological Survey, organized on the 8th of July last, and has since been continuously at work discharging the duties imposed by the law.

The commission has visited all the Territories and the Pacific States, and taken much testimony as to the character and the classification which should be made of the public lands in the various localities visited.

It is believed by the commission that it will be able to report on the classification of the lands, and the proposed changes in the laws for the survey and sale of the same, on or about January 1, 1880. The work of codifying existing land laws will require a much greater length of time for its completion.

USE OF RAILROAD ACCOUNTS.

The Auditor of Railroad Accounts herewith presented the operations of his office under the laws relating to Railroad Companies and certain Land-grant Railroad Companies for the fiscal year ending June 30, 1879.

The reason for the creation of this bureau was pointed out in the report, and is more fully shown by the experience

of the Auditor in regard to the accounts for services rendered by the various Railroad Companies that they be referred by the proper officers to this Department or to the First Auditor for revision, record, and report, before payment is

In order to protect the interests of the government, it has been found necessary that the Pacific Railroad Companies keep separate accounts of the business of the subsidized and unsubsidized portions of their roads, and the Auditor has therefore required them to be so kept.

A compendium of the laws of the United States relating to the Pacific Railroad Companies has been made and appended to the report, which will be valuable for reference in all the departments of the government.

The more important decisions of the Supreme Court of the United States in cases affecting the Pacific Railroad Companies are printed in full in his report, as well as a synopsis of the decisions in all other cases relating to them.

The Atchison, Topeka and Santa Fé Railroad Company has a suit against the United States now pending in the Court of Claims, relating to the question of the amount of deduction to which the government is entitled for the use of its railroad free of toll or other charge. The Union Pacific also has a suit pending in the same court touching the right of the United States to fix the rate of compensation for carrying the mails on the Pacific Railroad. When these questions are finally determined the Auditor sees no cause for further contests before the courts, and no reason why the relations between the government and the subsidized and land-grant railroads should not be such as to secure the government service by the railroads at the lowest rates, and to the railroad companies prompt settlement and payment for the same.

It appears that to March 3, 1871, over two hundred million acres of the public lands had been granted to States and corporations for railroad purposes, of which over forty-four million acres have been patented, and thirty-one million acres were for railroads "in the east, north, or south of the Missouri River."

Of these thirty-one million acres of land, at the average obtained, the Auditor states to be over one hundred million dollars. He deems it questionable, in view of the relation of these grants, whether their proceeds can be put to any other purpose than the construction of the railroad for which made (as, for distribution among the stockholders, for the construction of railroads), and calls attention to the further fact that the land grants provide that the United States mail shall be transported at such price as Congress may by law direct. The United States bonds issued to the Pacific Railroads for the miles of railroad so subsidized is 2,495.0525; and the average subsidy is \$25,900.66 $\frac{2}{10}$ per mile.

The miles of railroad subsidized by land grants under the Pacific Railroad and branches—are 3,035.85; the value already patented to the companies being 6,517,075.04 the value of which at \$5 per acre is \$32,585,375.20, or

condition of road-bed, track, bridges, and equipment of the railroads visited.

Many defects have been pointed out by the engineer, which it is expected the companies will remedy. The general condition of the Pacific Railroads is better than was anticipated.

Since 1876 the local business on all of these railroads has improved, more particularly on the Kansas Pacific, the Central Branch Union Pacific, the Atchison, Topeka and Santa Fé, and the Burlington and Missouri River Railroads, located in the States of Kansas and Nebraska.

	In 1876.	In 1878.
The gross earnings of the Central Branch Union Pacific being	\$172,852 68	\$624,953 77
The gross earnings of the Atchison, Topeka and Santa Fé being	2,486,582 67	3,950,868 04
The gross earnings of the Burlington and Missouri River Railroad, about	900,000 00	1,521,350 04

The Auditor further shows, by a statement regarding the business of most of the railroads in the United States, that while the gross earnings of these roads for the year 1878 increased about $3\frac{1}{2}$ per cent. over those of 1877, the increase of net earnings was nearly $9\frac{1}{4}$ per cent. indicating greater economy in operating expenses.

UNION PACIFIC RAILROAD.

The report of the engineer shows that the line and grade of the Union Pacific Railroad, and the road-bed and track, can be improved in many respects.

The road has now 460 miles of track laid with steel. Iron bridges are being substituted for wooden. The equipment of the road is in good condition, and a full supply of every kind on hand.

About 30 per cent. of the operating expenses, that is to say, \$1,654,795.82 were expended during the calendar year of 1878 on the maintenance of way, bridges, and buildings.

It is contemplated to build a new passenger depot at Ogden, and to improve the arrangement of yard, engine-houses, and shops.

Among the most valuable assets of this company are its coal mines at Carbon, Almy, and Rock Springs, the product of which it will be to the interest of the company to furnish at the lowest rate possible to settlers and others on its line.

The Union Pacific Railroad Company furnishes reports from which the following statements are derived:

Length of subsidized line.....	1,038.6
Leased to Central Pacific.....	5.0
Operated by Union Pacific.....	1,033.6

The company owns:

Locomotives.....	17
Passenger cars.....	12
Baggage, mail, and express cars.....	4
Freight and other cars.....	3,21

REPORT OF THE SECRETARY

The Auditor regarding money invested in the road, its express business, Pullman cars, and the suggestion that the company should run a passenger train.

CENTRAL PACIFIC RAILROAD

The Central Pacific Railroad Company has complied with the law and the requirements have been required. From these statements

The number of miles subsidized is.....
The number of miles operated
Locomotives owned, 297; leased, 33; total...
Passenger cars owned, 201; leased, 37; total...
Baggage, mail, and express, cars owned, 56;
Freight and other cars owned, 4,641; leased,
Stock subscribed
Par value of shares.....
Stock issued

Subsidy bonds
Funded debt
Floating debt
Interest due and accrued on funded debt
Balance of interest due and accrued on United States

Total debt

Total stock and debt

Cost of road proper
Equipment
Real estate

Total cost of road and equipment, &c

Cash, materials, and sinking funds.....
Bonds and stocks.....
Miscellaneous investments

For year ending June 30, 1879:

Passenger earnings.....
Freight earnings
United States mail
Miscellaneous earnings

Total
Operating expenses

Ordinary net earnings

Interest paid.....
Lands unsold (acres)
Transportation withheld in excess of the amount
retained under the acts of July 1, 1862, and

unded debt.....	\$22,130,100 00
loating debt.....	1,219,080 00
interest on funded and floating debt.....	5,621,366 00
interest on subsidy bonds	2,291,702 00
total debt.....	\$37,565,248 00
tock and debt	\$47,255,198 00
est of road and equipment.....	\$34,359,540 00
essenger earnings for year ending June 30, 1879.....	\$1,005,900 59
eight earnings.....	3,033,421 50
ecellaneous earnings.....	246,861 02
total.....	\$4,286,183 71
erating expenses	\$2,327,925 51
et earnings	\$1,958,258 20
interest paid.....	\$1,180,043 00
res of land unsold	4,569,483

This company having defaulted in the payment of interest on its bonds, receivers were appointed and operated the road from November 21, 1876, to June 17, 1879, since which time it has been operated by the Union Pacific Railroad Company. The road is reported in good condition, wooden bridges being replaced by iron ones, and transportation service prompt and safe.

The company operates its own Express, but runs Pullman sleeping-cars. Its account with the United States regarding 5 per cent. of net earnings and the half transportation compensation withheld has not yet been adjusted.

CENTRAL BRANCH UNION PACIFIC RAILROAD.

This company has rendered but very meager reports, which, with other information, show the following facts: Miles operated, 100; miles operated under lease, 153; gross earnings, \$624,953.77; operating expenses, \$360,40.52; net earnings, \$264,323.35; amount expended for new equipment, \$40,000; rentals of leased lines, \$66,000; taxes, \$24,000.

The engineer's report shows that the subsidized line of this company is not in good condition and that it is not up to the standard required, many bridges requiring immediate attention. The building of branch roads during the last two years has so increased its business that large additions to equipment have been required.

The transportation account and the 5 per cent. account of this company are still unsettled.

SIOUX CITY AND PACIFIC RAILROAD.

The condition of the property of this company in Iowa is reported as good, but the condition of the property in Nebraska is reported as inferior, requiring immediate and extensive repairs. The reports of the company show length of road operated, 153.13 miles; road owned, 107.04;

subsidized line, 101.77; number of locomotives, 13; number of passenger cars, 10; number of baggage, mail, and express cars, 5; number of freight and other cars, 194.

Stock subscribed, \$2,068,400; stock issued, \$2,068,400; funded debt, \$1,628,000; subsidy bonds, \$1,628,320; floating debt, \$126,283; accrued interest on funded debt, \$50,115; accrued interest on subsidy bonds, \$981,753; total debt, \$4,414,451; stock and debt, \$6,482,851; cost of road, \$5,350,138. Passenger earnings for the year ending June 30, 1879, \$86,187; freight earnings, \$185,640; miscellaneous earnings, \$81, total earnings, \$353,329; operating expenses, \$247,173; net earnings, \$106,156; interest paid, \$110,695; deficit, \$4,539.

TEXAS AND PACIFIC RAILWAY.

The usual report of this company for the year ended June 30, 1879, to this department was received and referred to the Auditor of Railroad Accounts on October 25, 1879. The company owns and operates 44 miles of road. Number of locomotives, 49; passenger cars, 29; baggage, mail, and express cars, 13; freight and other cars, 972. Stock issued, \$6,996,000; par value, \$100. Funded debt, \$19,123,406; floating debt, \$1,278,813; unpaid interest, \$292,595; total debt, \$20,694,814; stock and debt, \$27,690,814. Cost of road, \$26,906,901. Passenger earnings, \$456,576; freight earnings, \$1,582,926; miscellaneous earnings, \$96, total earnings, \$2,136,143; operating expenses, \$1,397,514; net earnings, \$738,629; interest paid, \$712,417. Lands unsold granted by State of Texas, 4,756,130 acres.

SOUTHERN PACIFIC RAILROAD.

From reports made to the Auditor regarding this road the following figures are obtained: Miles operated, 161.14; miles owned, 711.14; miles leased to Central Pacific, 550.81 miles; number of locomotives, 44; passenger cars, 62; baggage, mail, and express cars, 18; freight and other cars, 1,157. Stock subscribed, \$36,763,900; stock issued, \$36,477,000. Funded debt, \$29,186,000; floating debt, \$963,068; accrued interest on funded debt, \$409,410; total debt, \$30,558,478; stock and debt, \$67,035,000. Cash, material, and accounts due, \$219,889. Cost of road, \$64,813,154; cost of equipment, \$1,902,124; total cost of road and equipment, \$66,715,278. Passenger earnings, \$477,925; freight earnings, \$471,262; miscellaneous earnings and rent of road, \$3,350,208; total earnings, \$4,299,395; operating expenses, including taxes and insurance, \$2,588,297; net earnings, \$1,711,098; interest paid, \$1,890,237. Lands unsold, 9,245,118 acres.

NORTHERN PACIFIC RAILROAD.

This company furnishes the Auditor with statements as follows: Miles of road operated, 720; miles owned, 560. Stock authorized, \$100,000,000.

1,700; preferred stock issued, \$46,346,094; k. Number of locomotives, 55; number of mail, and express cars, 11; freight and lebt. Preferred stock unissued used as col-; floating debt, \$974,019; stock and debt, 20,931,966; earnings ten months to June ting expenses, \$711,464; net earnings, 187,781 acres.

D SAN FRANCISCO RAILWAY.

urnish the following information: Miles 1, 293.5. Number of locomotives 29; num- baggage, mail, and express cars 8; freight ued, \$21,642,100; funded debt, \$5,292,000; d interest, \$216,999; total debt, \$5,582,435; ost of road, \$26,198,626; cost of equipment, uipment, \$26,927,792. Passenger earnings 133; freight earnings, \$947,378; miscella- l earnings, \$1,201,651; operating expenses, 517; interest paid, \$546,965. Acres of land lantic and Pacific Railroad, 41,784,253.

URI RIVER RAILROAD IN NEBRASKA.

d to make reports. The Auditor furnishes other sources: Miles operated, 443; miles omotives, 29; passenger cars, 16; baggage, reight and other cars, 1,230. Stock issued, 1,933,300; floating debt, \$629,581; unpaid ; \$11,818,103; stock and debt, \$21,208,903; \$20,541,852. Earnings for the year ending sengers, \$352,000; from freight, \$1,385,000; ,350; total earnings, \$1,921,350; operating rings, \$1,302,673; interest paid, \$673,798; f land unsold estimated 1,000,000.

. PACIFIC RAILROAD.

receiver of this road, the following figures rated, 132.89; road owned and subsidized of locomotives, 6; passenger cars, 4; bag- 3; freight and other cars, 75. Stock sub- 0; funded debt, \$2,271,000; floating debt, 30; total stock and debt, \$6,444,130. Cost er earnings to June 30, 1879, \$60,965.57; ; miscellaneous earnings, \$20,737.46; joint total earnings, \$252,855.94; operating ex- 3,346.75; net earnings, \$139,509.10. Acres

OREGON AND CALIFORNIA RAILROAD.

From reports made by this company and other sources the following figures are given: miles subsidized, estimated at 300; miles operated, 200; number of locomotives, 14; passenger cars, 11; baggage, mail, and express cars, 4; freight and other cars, 215; par value of stock, 100; stock issued, \$20,000,000; funded debt, \$10,950,000; floating debt, \$800,000; total debt, \$11,750,000; total stock and debt, \$31,750,000; cost of road, \$4,806,208.98; cost of equipment, \$499,497.64; cost of real estate, \$189,907.64; passenger earnings, \$232,860.76; freight earnings, \$345,482.17; express and mail earnings, \$30,414.60; miscellaneous earnings, \$39,359.35; total earnings, \$648,116.88; operating expenses, including taxes, \$410,451.03; net earnings, \$237,665.35.

OREGON CENTRAL RAILROAD.

From reports furnished and other sources the following is compiled: Miles subsidized and operated, 47.50; number of locomotives, 4; passenger cars, 2; baggage, mail, and express cars, 2; freight and other cars, 42; stock subscribed, \$5,000,000; par value of shares, 100; stock issued, \$4,980,050; funded debt, \$4,695,000; floating debt, \$1,189,000; total debt, \$5,884,002.72; total stock and debt, \$10,864,052.72; cost of road, \$1,202,262.97; passenger earnings, \$26,001.60; freight earnings, \$41,460.07; miscellaneous earnings, \$2,658.93; total earnings, \$70,120.60; operating expenses, including taxes, \$69,849.82; net earnings, \$27,270.78.

APPENDIX, RECOMMENDATIONS, ETC.

The Auditor's report is accompanied by an appendix, containing statements and compilations of facts relating to the Pacific and Oregon grant railroad companies, the laws affecting them, statements of the affairs of the companies, their receipts, expenditures, and operations, the accounts between the United States and the Pacific Railroad companies, the condition of the respective land grants, and other matters of general interest to railroad companies.

The Auditor submits several recommendations of importance, to which attention is invited. He recommends that the Pacific Railroad act be amended so that any of these companies which may abandon any portion of the subsidized railroad, or which may divert their business from a subsidized to an unsubsidized railroad, be required to transfer the same and condition attached to the subsidized to the new and unsubsidized line, in order that the interests and rights of the United States may be protected; or, if that is not done, that all through traffic be required to be done only on the subsidized line.

The question involved is a new one and seriously affects the rights of the United States.

Another recommendation is submitted relative to the practical working of the sinking-fund act approved May 7, 1878. It appears that it

impossible to have the settlements made as contemplated under the provisions of that act in time for the money requirements to be paid into Treasury by the first day of February in each year; the Auditor therefore recommends that the day be changed to the first day of April each year; and also that the settlements and payments for the sinking-fund be required to be made semi-annually instead of annually.

He further recommends that the investments of the sinking-fund be authorized to be made in the first-mortgage bonds of the respective companies, or in such United States bonds as the Secretary of the Treasury may select.

Sinking funds are also recommended by him to be established for the Kansas Pacific, Central Branch Union Pacific, and Sioux City and Pacific Railroad Companies.

In order to prevent misunderstanding as to the locality of his office, and to make the title uniform with those of other bureau officers of this department, it is recommended that the title of the office of the Auditor of Railroad Accounts be changed to "Commissioner of Railroad Affairs."

PENSIONS.

On the 30th of June, 1879, there were 242,755 pensioners, divided as follows: Army invalids, 125,150; Army widows, children, and dependent relatives, 81,174; Navy invalids, 1,844; Navy widows, children, and dependent relatives, 1,772; surviving soldiers of 1812, 11,621; widows of deceased soldiers of that war, 21,194.

During the year 31,346 new names were added to the list; 908, formerly dropped, were restored; 13,497 were dropped.

The aggregate amount of one year's pension is \$25,493,742.15. The actual payments, however, during the year largely exceeds that sum, as nearly all the claims admitted embrace several years accrued pension. The aggregate amount paid to new pensioners during the year was \$763,758.60.

The number of unsettled pension claims on the 30th of June last was inclusive of claims for arrears.

Original claims continue to be filed as rapidly during the latter part of the year, as they have been for the past nine months, the Auditor estimates the number of unsettled cases that will be at the close of the year at 250,000.

Since the passage of the "Arrears" act, the claims for pension have increased at an unprecedented rate, the invalids nearly double that ever before in the history of the office.

On account of the great inflow of claims and the consequent accumulation of work, there is much delay in the issue of complaints and much embarrassment, and these must be prevented.

Until Congress authorizes the employment of a force sufficient to prevent the accumulation of claims.

A new and better system for recording the claims received has been

devised, and, when completed and in operation, will facilitate great labors of the office.

It appears evident that the present force of the Pension Office is inadequate for the prompt disposition of the business before it, therefore concur in the Commissioner's recommendation for an additional appropriation of \$50,000, to be immediately available for the current year. The Commissioner suggests that the clerical force of the offices of the Adjutant-General and Surgeon-General is not sufficient to enable them to respond with promptness to the large number of claims made upon them.

The Commissioner again calls attention to the present defect in the system of setting claims, and renews his recommendation that the system hitherto presented by him be adopted. In this connection he says:

"Besides being cumbersome and expensive, the present system is an open door to the Treasury for the perpetration of fraud. The affidavits in support of the claims have the same appearance to the officers of the bureau whether false or true. The system which are established in relation to the production of evidence in attempting to establish claims, include the frauds often work a hardship upon the honest claimant. He finds that through the death or imperfect recollection of witnesses or for some other cause, unable to comply with them, is often defeated, while the fraudulent claimant, who manufactures the necessary testimony to meet them, succeeds in his claim. On the other hand, the change proposed will possess the following advantages over the present system:

1. The testimony and proceedings to establish the pension claims will be of a reliable character. This will facilitate prompt, more just, and more liberal decisions, and protect the Treasury from frauds, while the claimant's expenses will be increased, but rather diminished.

2. The medical examinations being made by unprejudiced government surgeons, whose sworn duty it will be to find out and report the exact truth, both the claimant and the government will be relieved from the now too common danger of being the victims of the ignorance, prejudice, or carelessness of a neighborhood physician or surgeon.

3. The special investigation of cases by the special agents will be dispensed with, as no longer necessary for the detection of fraud. The publicity of the proceedings in the neighborhood where the claimants reside will operate to restrain the production of unmeritorious and fraudulent claims, and furnish ample protection to the government against the successful prosecution of any such which may be presented.

But the great point, and the one to which every other consideration should be subordinate, is that the new system, through its public proceedings among the claimant's neighbors, will obtain the truth in the cases in such reliable form that prompt justice will be done to the deserving."

The magnitude of the interests involved commends this system to the considerate attention of Congress. It is evident that the present system, based upon *ex-parte* testimony, exposes the government to loss and makes its detection very difficult. I therefore concur in the recommendation expressed by the Commissioner that a change is essential for the better protection of the government in the payment of pensions.

The Commissioner reports the satisfactory condition of the pension agencies and calls attention to what he deems the inadequate compensation of the agents. In the passage of the act fixing their pay,

expenses incurred by them were not estimated upon, and to afford them relief he recommends that the law be so amended as to allow them eighteen instead of fifteen dollars for each one hundred vouchers prepared and paid.

Appended to the report are interesting tables under the following heads: Number of pension claims received, disposed of, and remaining on hand; number of pensions allowed and increased during the year, with their annual value, together with the yearly value of all pensions on the roll, and the amount paid for pensions during the year; number of pensioners dropped from the rolls during the year, and the cause; appropriations for the payment of pensions for the year, and the amount of disbursements; pension agents' name, location, geographical limits, and amount of funds on hand June 30, 1879; operation of Special Service Division for the year; comparative statement by agencies of the number of pensioners on the rolls at the beginning and close of the year; arrears payments made at each agency, and number of invalids, widows, children, dependent fathers and mothers, respectively; monthly receipt and disposal of claims for twenty-eight months succeeding June 30, 1877; pension claims filed and allowed since 1862; number of pensioners on the roll at the termination of each fiscal year since 1861. These statements give a correct exhibit of the work of the Pension Office, past and present, and afford valuable information to those who are interested in the subject.

PATENTS.

The report of the Commissioner of Patents shows a slight decrease of the work of the office for the year ended June 30, 1879.

The number of applications for patents was 19,300, being 357 less than the previous year. The number for design patents was 697; for reissue, 639; for registration of trade-marks, 1,465; for registration of labels, 631; caveats filed, 2,674.

The number of patents granted, including reissues and designs, was 12,471, being 1,629 less than the previous year. The number of trade-marks was 1,144; labels registered, 403; patents withheld for non-payment of final fee, 828.

The total receipts of the office were \$703,146.79, being \$31,741.19 less than those of the previous year.

The expenditures for the year were \$548,651.47. This includes \$5,000

for repair of models damaged by the fire, and is not to the current expenses of the office.

For the previous year were \$665,906.02; \$50,000 of repair of models. Excluding the amount appropriated for damaged models in both years, the current expenditures were \$72,254.55 less than those of the previous year. To this reduction the Commissioner says:

The reduction in expenditures has been enforced by the reduction of the appropriations carried so far as seriously to cripple the office and injure

by United States commissioners, or other United States officers, of commissions issued by foreign governments to take testimony in the United States to be used before foreign patent offices and before all judicial, legislative, and executive departments of foreign governments, and to punish perjury committed in such testimony; the law to be operative only in favor of such governments as shall make like provision for taking testimony in foreign countries, to be used in like manner in the United States.

As to the work of reproducing drawings by photolithography, the Commissioner expresses the opinion that the highest standard possible in the art could be secured at the lowest cost by the establishment of a division in some one of the executive departments, where photolithographic work could be executed for any branch of the service that might require it.

Recommendation is made for an appropriation of \$50,000 for printing the specifications of patents issued prior to November, 1866; also for an appropriation of \$10,000 for the publication of the general index of patentees, from 1790 to 1873. The work is nearly completed and will soon be ready for the printer.

For the reproduction of illustrations for the Patent Office Report for the year 1870, \$6,000 is asked for.

For the reproduction of drawings destroyed by fire it is estimated that an appropriation of \$60,000 will be necessary, and the urgency of that the amount be made immediately available.

He also recommends that the law relating to the payment within six months of the allowance of a patent be made the execution of the law possible in all cases. The law, requiring a patent to be dated within six months of the payment of the fee on the last day of the prescribed time, is impossible to conform to the law without resorting to the allowance, made upon payment of the final fee too late to admit of the preparation of the patent before the expiration of the six months. The extension of the time, within which a patent may be dated, to seven months from the date of its allowance would obviate the present difficulty.

EDUCATION.

The Commissioner of Education states that the demand upon his office for information relating to educational matters has been greater during the past year than ever before. He reports that the collection of educational appliances and illustrations in the possession of the office has received numerous visits and proved extremely useful, and recommends that provision be made for its better exhibition, cataloguing, and increase; also, that a librarian be allowed by law, the library of his office containing at the present time 11,000 volumes and 22,000 pamphlets.

The office has sent to correspondents 46,000 pieces of matter, of which there were—

Of letters, circulars, and inquiries	1
Documents (packages)	3

and has received from its correspondents 30,000 pieces of mail matter, of which

Letters, circulars, receipts, and replies numbered	2
Documents (packages)	

The printing of the circulars of information has been more than doubled during the year, and yet this work is much behind.

The Commissioner notes a marked advance in the adoption of the approved methods of teaching.

Not least among the progressive movements of institutions for superior instruction is the extension of their advantages to women, adding the provisions secured by colleges endowed especially for them, facing in connection with some of the oldest and wealthiest foundations for young men.

The colleges of agriculture and the mechanic arts are making commendable advances in their appointed province. Great industrial interests are beginning to acknowledge the benefits received from researches and from the trained experts they are sending out. In their work they are ably supplemented by the technical and industrial schools sustained by private endowments.

The increasing practice by professors in our scientific schools of supplementing ordinary class work with extensive field teaching, he notes as an interesting example of the tendency toward original investigation developing among our educators.

In professional training some efforts are being made to increase preliminary qualifications, to extend the professional course to at least four years in all ordinary cases, and to so grade the studies as to permit examinations instead of postponing all these severe tests to the end of the entire course.

He notes also the progress made in training in special industries, such as wood-carving, industrial drawing, cookery, nursing, &c.

The Commissioner expresses the opinion that population in the Territories has outstripped the number of school-houses and teachers, and that the present Territorial provisions for education are inadequate. He renews his recommendation that greater importance be given to educational office in the Territories.

In the continued embarrassed condition of education in the Territories and in the South he finds reason for earnestly renewing his recommendation of the passage by Congress of some measure of financial aid, which he suggests might, at first, be distributed on the basis of illiteracy.

CENSUS.

In the last annual report of the department it was recommended that new legislation be had in provision for the approaching tenth census of the United States. The considerations which, in the interest alike of economy and of sound statistics, seemed to require that the census should not continue to be taken under the act of May 23, 1850, were set forth at length in the papers accompanying the report. By act of March 3, 1879, Congress instituted a new system of enumeration, and made provision for the tenth and subsequent censuses upon principles widely different from those of the act of 1850. The careful and detailed consideration which has been given to this enactment in the preparations making for carrying its provisions into effect, and the experience which has been had of the workings of the system so far as it has already become operative, have confirmed me in the belief that the new legislation was wise and salutary, and that the results of the census soon to be taken under its provisions and sanctions will fully justify its wide departure from the methods previously in use.

No defect has appeared which in an appreciable degree threatens the integrity of the enumeration, nor has any change in any essential feature of the scheme suggested itself to the department as likely to result in an improvement in the quality of the statistics to be obtained.

The Superintendent of Census in his report recommends that the benefit of the franking privilege be extended to mail matter addressed to the Census Office in response to its inquiries, or in compliance with its requests, by persons not officers of the government; and that one interrogatory, which by the act of March 3, 1879, was introduced for the first time into the so-called population schedule, viz, as to the holders of the public debt, be dispensed with, as unlikely to secure results of value and as certain to hinder the progress of the enumeration if not to engender animosity.

These recommendations meet the approval of the department.

The report of the Superintendent raises the question whether a copy of the returns of enumerators should be provided for by new legislation.

that a copy of the returns would probably cost \$130,000
n. In his opinion such an expenditure, if it were to be in-
l properly be looked upon wholly as a measure of insurance
ccidental destruction of the original schedules. The use
copy would be put, except in case of such destruction of
would be far too slight to justify the great cost of making

use may be regarded, in the consideration of this subject,
nil. The danger to be apprehended to the schedules is
their loss prior to or during transmission to the Census

It is not my expectation to be obliged to present to Congress any request for a deficiency appropriation under the law as it stands, and I am satisfied that the Superintendent, in all his plans, is legally observing the conditions thus imposed by the law creating his office and providing for the approaching census.

In the preparations for the enumeration which is to be commenced on the first of June, progress has been made to the point of apportioning among the States and Territories the aggregate of 150 supervisorships, authorized by the act of March 3, and dividing the States to which supervisorships in excess of the minimum were assigned into districts of a corresponding number. The duty which the law imposes on the department, of fixing the rates of compensation to be paid to enumerators, is one of great nicety and difficulty.

The conditions, geographical and other, of each section of the country which bear on the facility of enumeration are being thoroughly and systematically studied, in order that the greatest economy and efficiency of service may be combined with the highest attainable equity toward the agents of the government performing this arduous and responsible work.

ENTOMOLOGICAL COMMISSION.

The United States Entomological Commission has continued its investigations into the habits of the Rocky Mountain locust or grasshopper, in the permanent Northwest breeding-grounds of the species. The principal aim of the commission has been to get more accurate knowledge of the limits and extent of those breeding-grounds, with a view of preventing the migrations of the winged insects therefrom.

Congress at its last session enlarged the field of the commission's labors by requiring an investigation into the habits of the cotton worm, and of other insects injurious to the cotton-plant and to agriculture. The work in the West and Northwest is being continued by Dr. Packard and Professor Thomas, while Professor Riley has taken charge of the work in the Southern States, and has been industriously pursuing it. Some of the discoveries and practical results have already been embodied in a special bulletin. The losses which insects inflict on the crops of the country amount to many million dollars annually, and the well-directed efforts of intelligent entomologists in endeavoring to prevent these losses have already resulted in much good.

The Southern States have suffered severely from the cotton-worm alone, and are directly interested in this branch of the work of the commission.

A sufficient sum is asked for, to complete in a satisfactory manner the investigations now being prosecuted, and to publish a report thereon for distribution among those interested in the success of the work.

REPORT OF THE SECRETARY OF THE INTERIOR.

the reservation, when the same were necessary to carry out the provisions of the act; fix the value of property condemned, and to issue certificate or certificates therefor to persons owning the same. He made the duty of the Secretary of the Interior within thirty days after said commissioners filed their report and map in his office, to instruct the land officers of Little Rock land district to allow the lands to be entered, and to cause a patent to be issued therefor; the claimant or claimants, his heirs, or legal representatives, in whose favor said commissioners had adjudicated, having the sole right to enter and pay for, within twelve months of public notice of right to enter, at the price fixed by said commissioners, the amount of land that they were entitled to purchase, as shown in the certificate issued in their favor. Upon failure to pay the valuation appraised, within the time prescribed, the said lands, together with all other lands, that no one has an adjudicated right to purchase under the act, are to be sold at public sale to the highest bidder for not less than their appraised valuation.

The moneys obtained from the sale of these lands are to be paid into the Treasury in the same manner as other moneys arising from the sale of public lands, and held for the purpose specified and for the disposal of Congress.

Under the provisions of the act cited, the President, on the 1st of March, 1877, appointed the following commissioners: A. H. Crockett of New Hampshire, John Coburn of Indiana, and M. L. Stearns of Florida. Their term of office was for one year, and in 1878 provision was made by Congress for an extension of their time, but owing to an unfortunate omission in the engrossing of the bill, the proviso relating to the extension of the term failed to become a law; Congress, however, on the 1st of December, 1878, authorized the continuance of the commission for another year, and the same gentlemen were re-appointed by the President.

A preliminary report recently received from the commissioners gives rise to the belief that their work is about completed and that the requirements of the statute relating to their duties will be fully complied with at the expiration of their term of office. Their labors have been arduous and, from their nature, somewhat embarrassing; yet they appear to have been performed with a conscientious desire to do justice to the claimants without doing injustice to the interests of the government. If the final results of their labor shall prove as satisfactory as the preliminary and good judgment already shown, they will be entitled to great credit for the just settlement of vexed questions and for the laying out of a plan which, if carried out by the citizens of Hot Springs, will make of that place a most attractive resort for those who seek its pure air and its medicinal waters.

The efficacy of the waters of Hot Springs has been conclusively proven by the many remarkable cures which have followed their judicious use. When their virtues become more widely known, these

hardship will in time become an unbearable evil, unless some organized effort is made to properly care for those whose poverty and sufferings commend them to public sympathy. To provide for this growing necessity a suitable tract should be reserved from sale.

The west line of the permanent reservation forms the east line of Valley street, the principal business thoroughfare in the town. A substantial stone wall, to retain the filling in of earth necessary to elevate the line of the reservation to the grade adopted by the commissioner, should be built at as early a day as possible. As this wall would be located on the permanent reservation, the expense of its construction should be borne by the United States. A plan has been submitted to the superintendent showing extent and cost of the improvements. It will call for about 72,000 cubic feet of masonry, and would cost about \$15,000. Recognizing the importance of this work, and the propriety of its cost being borne by the United States, I recommend that the monies collected for rents of Hot Springs and covered into the Treasury by the late receiver, or so much thereof as may be necessary, be appropriated by Congress for the building of this wall, and for grading the ground within the permanent reservation so as to conform to the proposed grade of Valley street.

The law governing the sale of the Hot Springs property should be modified as to permit entry upon and purchase, within three months after date of notice, of the lands that no one has an adjudicated right to purchase. As the law now stands these tracts of land cannot be sold until after the expiration of fifteen months, so that the growth of the town, so far as the occupation of new land goes, must be practically suspended during that time.

While there are good reasons for allowing a year's time for payment to those who have an adjudicated right to purchase, I can conceive of none for withholding all the lands from sale during this year of grace and three months beyond, to cover period of public notice.

The necessity for this modification is so apparent that I recommend it to the early and favorable consideration of Congress.

The reduction of the water rents at the last session of Congress has made it impossible to carry out the projected improvements upon the reservation, the amount received being barely sufficient to pay the salary and expenses incurred by the superintendent. If the reduction was intended to benefit those who use the waters, it has failed in its purpose for the charge for bathing remains the same, and the only ones favored are the bath-house keepers. Considering the necessity for a reliable and sufficient revenue to maintain and improve the reservation, I recommend that the old rates be reestablished, so as to secure the funds necessary for the improvement of the reservation and the proper care and supervision of the grounds.

REPORT

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condition of the hospital and to the temporary arrangements made for the accommodation of some of the patients.

During the year buildings have been erected for hospital use; a bakery and laundry. They have been substantially built, and have proved of great service to the institution. Ample precautions have been taken to guard against fire by the erection of new hydrants, cisterns and force-pumps, and by providing the necessary hose, ladders, buckets and extinguishers.

The farm and garden belonging to the institution are reported as a source of health and profit. The products of both for the year are valued at \$17,559.20, exclusive of products consumed on the farm, valued at \$5,421.

The receipts for the institution for the year were \$176,809.41; \$150,000 coming from the Treasurer of the United States.

The estimates for the next fiscal year are, for support, clothing, treatment of the insane, \$175,000. For general repairs and improvements, \$10,000. For special improvements, reservoirs and filters, additional accommodation for cattle, storage for hay, &c., a kitchen, a millery detached from main hospital, a "mortuary building," and greenhouse, \$25,000. For furnishing and fitting the relief building for occupation, \$15,000. Good reasons are given for the appropriations as above, and I recommend them to the favorable consideration of Congress.

The board of visitors refer to the necessity of having separate quarters provided for the female patients, and submit at length their views, and those of the Association of Medical Superintendents of Institutions for the Insane, showing that separate accommodation for females renders their care and treatment more easy and successful. In view of this the recommendation formerly made in favor of the erection of the additional building for the accommodation of female patients, aside from the advantages which must come from the separation of the sexes, the additional building is needed to provide for the growth of the institution. It is thought that at least three years will be required to complete the proposed edifice, and such appropriation as may be necessary to begin the work should be made without delay.

The sanitary condition of the hospital, considering its overcrowding, has been excellent, and its general management has been commendable to those having charge of its affairs.

INSTITUTION FOR THE DEAF AND DUMB.

The twenty-second annual report of the Columbia Institution for the Deaf and Dumb shows a favorable condition of its affairs. The number of pupils in the institution at the date of the report, October 1, 1879, was 118, an increase of 48 since July 1, 1878.

The sanitary condition of the institution has been excellent, no de-

ing the year, and no serious cases of sickness re-

uction is essentially the same as that of previous
ional progress of the pupils is reported as more
before. Instruction in articulation under Bell's
ach has been satisfactory in all cases.

institution for the year ended June 30, 1879, were
51,000 was from direct appropriation by Congress.
ring the same period were \$54,773.69, of which
laries and wages.

ed for improvements on buildings and grounds was

he next fiscal year are, for the support of the insti-
rection and fitting up of a gymnasium, and for im-
losure of the grounds, \$14,388.60.

FREEDMEN'S HOSPITAL.

reedmen's Hospital shows the whole number of
al during the year ended June 30, 1879, 904.

he year, whites, 190; colored, 452; transients, 31;
number 136 were white males, 34 white females;
males, 205. During the year 422 were discharged
red, and 140 died.

ans' Home and Asylum, containing 115, was fur-
s during the year.

ed and seventy-four patients have been treated
ul, and about four thousand prescriptions have been

s tables showing the place of nativity of the patients
seases for which they were treated both in the hos-

The average cost of each patient, for subsistence,
and clothing, is given at forty-five cents per day.
concludes his report with the statement: "This is

spital for the reception of all classes of patients

Many of the patients are non-residents, and must
where by the general government when they fall
he location of the hospital is central and healthy
l malarial disease has been known to occur within
ey have been occupied for their present purpose.
typhoid fever."

MBIA HOSPITAL FOR WOMEN.

of this institution shows a gratifying condition of
past year. Out of 299 cases treated in the hospital
occurred during the year.

mining claim should be as definite, so far as its boundaries go, as that of a city lot, and the right to work should be confined within the perpendicular lines of its side and end. Following the dip of mineral veins on the ground of other parties is, in his opinion, the fruitful source of litigation.

Peaceful relations have been maintained with the Indians during the past year. A majority have abandoned their tribal relations, and have taken up small farms in various localities, which are being worked to advantage.

The mining interests of Utah are reported as in a most excellent condition; the introduction of new methods of reducing ore causing larger profits to be realized than were possible in former years.

From the year 1870 to 1878, inclusive, the Utah board of trade reports, as taken from the books of the Utah Central Railroad, the shipment from Salt Lake City of 76,912 tons of lead ore, 109,276 tons of argentiferous lead bullion, and 8,197 tons of lead, worth in the aggregate about \$40,000,000. The value of the ores taken out during the past three years was \$18,558,805.48; of this, \$5,379,446 was lead, the remainder being the precious metals.

The finances are reported in good condition. There is no indebtedness unprovided for. Territorial scrip which four years ago sold for 40 cents on the dollar, to-day is worth 98. Taxation is equitable, and provides for the necessary expenses of the Territory.

During the past year one hundred and fifty miles of additional railroad have been built.

WASHINGTON TERRITORY.

The governor of Washington Territory reports satisfactory advancement in the development of the agricultural, manufacturing, mining, and commercial resources of the Territory. Its isolated position and the misconception existing in relation to its climate and productions have tended to prevent its rapid growth.

Situated between the forty-sixth and forty-ninth degrees of north latitude, its climate is generally believed to be cold, and yet the results of careful observation show that the climate of Western Washington is mild, during the winter months the temperature seldom falling below the freezing point. A tabular statement is given, showing the character of the climate throughout the year, based on accurate meteorological observations taken at Port Blakeley, on Puget Sound, in latitude $47^{\circ} 36'$. It would appear from this statement that the lowest temperature during a period of twenty-six months was 25° above zero. The highest in 1877 was 88° ; in 1878, 94° ; and in 1879, 86° .

The average rainfall is about the same as in the Eastern and Western States. The mildness of the climate is due to the presence of the thermal current, having its origin at the equator, near the one hundred

local consumption. Wheat and oat fields, as rich as any in Illinois and Minnesota, may be seen six or seven thousand feet above the level of the sea. The grape is easily raised, is free from disease, and affords a good quality of wine.

The area of agricultural production cannot be even approximately given. All irrigable lands, wherever found in the Territory, may be classed as productive or farming land.

The Rio Grande Valley, about four hundred miles in length by an average of five in width, has a soil light, warm, and surpassingly rich. Not more than one-tenth of this land is occupied. Fruits succeed admirably in this locality, although the varieties at present cultivated, except the grape, are of the poorest kind.

The valley of the Pecos River is almost entirely devoted to grazing purposes. Like the valley of the Rio Grande its soil is rich when properly irrigated, and its climate healthy and delightful.

The Mesilla Valley, like the two mentioned, is inviting both for agricultural and grazing purposes. The vast tracts of table lands bordering the valleys are too high for irrigation, but yield grasses of the richest kind for cattle and sheep raising. With such unlimited ranges, stock raising has become a profitable industry, with promise of substantial growth in the future.

In relation to the mineral resources, the governor is of the opinion that New Mexico will compare favorably with her neighbors in the yield of precious metals.

Although the era of prospecting has hardly given place to that of development, enough is already known to warrant the assertion that the territory is well stored with gold, silver, iron, copper, lead, zinc, mica, gypsum, coal, marble, and precious stones.

The coal croppings in Socorro and Colfax Counties, and on the Galisteo River, indicate an inexhaustible supply both of bituminous and anthracite. Cannel coal is also found in the Territory. No attention is being paid to the production of iron, although it is to be found, more or less, in every mountain range.

The same may be said of copper, lead, and mica, while gypsum is so common that it is hardly a merchantable commodity.

Silver and gold are to be found in many localities, and many mines are being worked to advantage. The great drawback at the present time is the want of water.

Mention is made of the numerous hot springs in the Territory.

The waters of many of these have well-determined curative properties, and at Las Vegas elaborate preparations are being made for the cure and entertainment of guests and invalids.

An approximate estimate gives the territory a population of 125,250. The Pueblo or town Indians are estimated at 9,000, and the wild Indians at 14,500.

The school system established in 1871 shows commendable progress,

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embarrassments is the early abolition of tribal relations, the giving of lands to the Indians in severalty, with restrictions upon their alienation, the doing away with extensive reservations, and the extension over the Indians of the laws of the United States, with rights and obligations suitable to their condition and future wants.

The governor discusses the theory of Territorial government, the necessity which gave rise to its organization, and the crude national legislation which from time to time has been had to provide for its necessities. He says "there is no compacted and consistent system of national law concerning the Territories. Acts have been passed, amendments amended, overlapped, and repealed, and special features introduced to fit special cases, until they lie along the pages of our legislative history in broken fragments like wrecks on the seashore and a source of embarrassment. Common people, whose interests are in daily jeopardy, cannot understand them; lawyers are paid for disagreeing on their meaning, and judges, when failing from its obscurity to ascertain what the law is, are compelled to decide what it ought to be."

The mining laws especially need revision; and in the governor's opinion Congress should pass a comprehensive and carefully-revised act covering the mining field, clearly defining all rights and remedies, leaving but little scope for local legislation. It is also suggested that Congress interpose for the protection of agricultural interests by preventing the monopoly of the streams of the Territory by private individuals or corporations. The usufruct of natural streams should be guarded by stringent laws, so that the water needed by the many should not be monopolized by the few. The laws relating to the holding of United States courts need revision. The powers and duties of judges, especially in vacation; the mode of enforcing attendance of jurors and witnesses; the manner of impaneling grand and petit juries should be made more effective, and be more clearly defined.

The inadequacy of present compensation to public officials in the Territory, and the insufficient appropriations for contingent expenses are alluded to as sources of much embarrassment.

The finances of the Territory are reported to be in a satisfactory condition, and the debt of the Territory is gradually being reduced.

No reports have as yet been received from the governors of Arizona, Wyoming, and Montana.

RECONSTRUCTION OF THE BUILDING.

The restoration of the Interior Department building is progressing as rapidly as the nature of the work of reconstruction will permit. The roof on the north wing is completed, and that of the west wing will soon be finished. The engineer in charge expresses the opinion that both wings will be ready for occupancy before the close of the present fiscal year, and that the cost of the work will not exceed the amount appropriated.

This portion of the building, when completed, will be substan-

Indians exclusive of five civilized tribes.

	1879.	1878.
Number of acres broken by Indians	24, 270	22, 319
Number of acres broken by government	2, 801	2, 072
Number of acres cultivated by Indians	157, 056	128, 018
Number of bushels wheat raised by Indians	328, 637	260, 100
Number of bushels corn raised by Indians	643, 286	971, 363
Number of bushels oats and barley raised by Indians	189, 054	172, 967
Number of bushels vegetables raised by Indians	390, 698	315, 585
Number tons hay cut by Indians	46, 333	36, 942
Number of Indian apprentices	185	104
<i>Five civilized tribes.</i>		
Number of acres cultivated	273, 000	245, 000
Number of bushels wheat raised	565, 400	494, 400
Number of bushels corn raised	2, 016, 000	2, 642, 000
Number of bushels oats and barley raised	200, 000	201, 000
Number of bushels vegetables raised	336, 700	320, 000
Number tons hay cut	176, 500	116, 500

A PATENT FOR LAND.

The more intelligent and best disposed Indians are now earnestly asking for a title in severalty to their lands as a preliminary to supporting themselves from the products of the soil. The number of persons who can be employed in stock-raising is small, since comparatively little labor is required and a few men can herd and take care of a thousand head of cattle; but the cultivation of the soil will give employment to the whole Indian race. The only sure way to make Indians tillers of the soil, under the best conditions to promote their welfare, is to give each head of a family one hundred and sixty acres of land, and to each unmarried adult eighty acres, and to issue patents for the same, making the allotments inalienable and free from taxation for twenty five years.

A bill to carry out this beneficial object was submitted to the extra session of the Forty-sixth Congress [H. R. 354]. It was carefully prepared by the department to meet all the wants of the situation, and was similar to a bill which had been introduced into the Forty-fifth Congress and had been favorably reported on by committees in both Houses, but which had failed to receive action. The speedy passage of such a bill would be a greater boon to Indian civilization than any other that could be bestowed. As will be seen throughout this report, the willingness of the Indian to work has already been demonstrated. Give him the land and the opportunity, and the result is a foregone conclusion. But so long as he has no individual title to the land he is asked to cultivate, the fear that it will some day be taken from him will operate as a serious hindrance to his progress. With the Indian as well as the white man industry and thrift have their root in ownership of the soil. The patenting of lands in severalty creates separate and individual interests, which are necessary in order to teach an Indian the benefits of labor and to induce him to follow civilized pursuits.

In this connection I desire to call attention to House bill 352, 46th Congress, 1st session, which confirms certain entries of lands made by Chippewa Indians in Michigan, and also to House bill 355, introduced during the same session, amending the deficiency act of March 3, 1875. This latter bill extends the limitation placed upon the conveyance of lands taken by Indians under the homestead law to twenty-five years from date of patent instead of five years. It also includes other limitations embraced in House bill 354 referred to above. Under the provis

ions of this act a large number of Indians in Oregon, Washington Territory, and other portions of the Northwest, who are not on reservations could be readily and advantageously settled.

PENAL SETTLEMENTS.

In former years when Indians committed serious crimes it was customary to inflict punishment therefor by sending them to Saint Augustine, Fla., to be kept in close confinement at Fort Marion. They were then deprived of their liberty until they were believed to be in a fit frame of mind to be permitted to go back to their tribes, with a reasonable prospect of their remaining quiet in the future. Of late years the military, who have acted as custodians of these captive Indians, have objected to keeping them, on account of the expense of feeding them from the Army appropriation, and for the last two years it has been a difficult matter to cause Indian criminals to be held in custody beyond a very brief period of time, although the Army appropriation bill makes special provision for the support of Indian prisoners.

A penal settlement for the confinement and reformation of the most turbulent and troublesome individuals among the various Indian tribes is a pressing want, and immediate action should be taken for the establishment of such a settlement. For the worst class of refractory Indians one settlement should be in Florida, which is far enough away from Indian reservations to make any attempt at escape hopeless. Another settlement should be established in the Northwest, at some point where a considerable quantity of arable land can be found, so that Indians who are thus restricted in their liberty may be taught to work for their support.

It is impossible to properly govern a barbarous people like our wild Indians without being able to inflict some punishment for wrongdoing that shall be a real punishment to the offender. At the present time the military are called upon to suppress insurrections, and to chastise by the penalties and losses of war, those who rebel against the government. These are temporary evils to the Indians, and unless the punishment inflicted is unusually severe the lesson is soon forgotten. Moreover, in such cases chastisement often falls heavily on innocent parties instead of the guilty. If the Indian Office had a penal settlement where turbulent individuals among the tribes could be placed, they could be taken from their homes to the place of punishment without disturbing the general peace, and the prompt infliction of a punishment of this kind would tend to curb the evil-disposed and prevent them from stirring up outbreaks. In fact there is nothing the Indian would dread more than to be deprived of his liberty.

Such a settlement should be guarded by a sufficient force to exercise perfect discipline, and such prisoners should be taught trades as well as agriculture. A school of correction of this kind would be of inestimable value to the Indian service, and it would exercise a reformatory influence that could not be obtained by simple confinement. Useful occupation provided for the captives, with some encouragement to industry, would in most cases enable them to be returned to their homes in an advanced condition of civilization.

SALE OF ARMS TO INDIANS.

During the last two years the sale of arms and ammunition by Indian traders has been strictly forbidden and no case is known where the prohibition has been violated. Such vigilance has been exercised

by the Indian Office in this matter that trader's licenses have been revoked whenever there was the slightest suspicion of the existence of this contraband trade. Nevertheless, outside of Indian reservations, men are everywhere found driving a thrifty business in selling breech-loading arms and fixed ammunition to non-civilized Indians, and the sales thus made are limited in amount only by the ability of the Indians to purchase.

Previous to the late Ute outbreak the Indians were amply supplied with Winchester and Spencer rifles and fixed ammunition obtained from traders outside of their reservation. Game was abundant on or near their reserve, and for some time the Utes had been making sales of peltries to a large amount, and were thus enabled to provide themselves with such arms and ammunition as they desired. Their largely increased purchases of arms just before the outbreak might have served as a notice to these unscrupulous traders that an outbreak was impending in which the lives of innocent people would be sacrificed. There is no offense against the commonwealth showing greater moral turpitude than the crime of those persons who recklessly place in the hands of savages all the improved patterns of arms, which they know will be used to destroy the lives of innocent white citizens.

There is no statute against this crime, and the only semblance of prohibition is contained in the following joint resolution and proclamation, viz:

EXECUTIVE MANSION,
November 22, 1876.

A joint resolution adopted by Congress August 5, 1876, declares that—

Whereas it is ascertained that the hostile Indians of the Northwest are largely equipped with arms which require special metallic cartridges, and that such special ammunition is in large part supplied to such hostile Indians, directly or indirectly, through traders and others in the Indian country: Therefore, Resolved by the Senate and House of Representatives in Congress assembled, That the President of the United States is hereby authorized and requested to take such measures as, in his judgment, may be necessary to prevent such metallic ammunition being conveyed to such hostile Indians, and is further authorized to declare the same contraband of war in such district of country as he may designate during the continuance of hostilities.

To carry into effect the above-cited resolution, the sale of fixed ammunition or metallic cartridges by any trader or other person in any district of the Indian country occupied by hostile Indians, or over which they roam, is hereby prohibited; and all such ammunition or cartridges introduced into said country by traders or other persons, and that are liable in any way or manner, directly or indirectly, to be received by such hostile Indians, shall be deemed contraband of war, seized by any military officer and confiscated; and the district of country to which this prohibition shall apply during the continuance of hostilities is hereby designated as that which embraces all Indian country, or country occupied by Indians, or subject to their visits, lying within the Territories of Montana, Dakota, and Wyoming, and the States of Nebraska and Colorado.

U. S. GRANT.

resolution is, at best, only a specimen of very loose legis- hereof a well-considered penal statute should have bidding such sales not only in the Northwest, but wher non-civilized Indians, whether on or off reservations ys is that such trading will be carried on just outside , where all sorts of contraband sales are effected and nts are powerless.

t resolution prohibits the sale of "metallic ammunition' rms as well. The right of purchasing arms *ad libitum* ined of. Without arms, ammunition would be of no use 1 be traded in to any extent with little danger of de n be easily carried concealed about the person. The sal- ther hand, could be readily detected and exposed; and sales that legislation should especially be directed. I n as if the very men engaged in this murderous traffi

and framed the above resolution to protect their guild and to enable them to ply their trade with impunity. When it is considered how many lives have been lost during the time which has elapsed since the passage of this resolution (which virtually permits this unhallowed traffic in the implements of death), it is strange that no adequate legislation has been had for the protection of human life. A law by Congress prohibiting under severe penalty the sale of both fire-arms and fixed ammunition to non-civilized Indians, is the only common-sense and practical method of putting an end to this dangerous traffic.

INDIAN EDUCATION.

The work of promoting Indian education is the most agreeable part of the labor performed by the Indian Bureau. Indian children are as bright and teachable as average white children of the same ages; and while the progress in the work of civilizing adult Indians who have had no educational advantages is a slow process at best, the progress of the youths trained in our schools is of the most hopeful character. During the current year the capacity of our school edifices has been largely increased, and some additional schools have been opened. The following tables will show the increase of school facilities during the year:

	1879.	1880.
Number of children, exclusive of the five civilized tribes, who can be accommodated in boarding-schools.....	3,461	2,970
Number of children who can be accommodated in day schools.....	5,970	5,970
Number of boarding-schools	52	52
Number of day schools	107	107
Number of children attending school one or more months during the year, male, 3,965, female, 3,228	7,193	6,193
Number of children among the five civilized tribes attending school during the year.....	6,250	5,193

In the last report of the Indian Office an account was given of the progress of Indian education initiated at Hampton, Va. The progress of the children sent to Hampton last year has been very satisfactory. They have learned as readily as could have been expected, and the success attending the experiment has led to the establishment of a training school of the same kind at Carlisle Barracks, Carlisle, Pa., under the immediate charge of Lieut. R. H. Pratt, U. S. A. He has now in full operation a school consisting of 158 Indian children of both sexes, three-fourths of whom are boys. These children have been taken in large numbers from the Sioux at Rosebud, Pine Ridge and other agencies on the Missouri River, and from all the tribes in the Indian Territory except the civilized Indians.

Carlisle is pleasantly situated in the Cumberland Valley. The soil is fertile and the climate healthy, and not at all subject to malaria. The grounds surrounding the barracks a large amount of gardening can be done advantageously. The buildings are comparatively new, brick buildings, in a good state of preservation, and furnish pleasant and commodious quarters for those already there, with a capacity to provide accommodations for at least four hundred more children. It is hoped that Congress will make further provision by which the number of pupils at this school may be largely increased.

These children have been very carefully selected, having undergone the same sort of examination by a surgeon to which apprentices for the navy are subjected, and only healthy ones have been accepted. The pupils will not only be taught the ordinary branches of an English education, but will also be instructed in all the useful arts essential in providing for the every-day wants of man. The civilizing influence of the

schools established at the East is very much greater than that of like schools in the Indian country. All the children are expected to write weekly to their homes, and the interest of the parents in the progress and welfare of the children under the care of the government is at least equal to the interest that white people take in their children.

In addition to the scholars at the Carlisle training school, the number during the coming year at Hampton will be increased to about sixty-five. Benevolent persons all over the country are taking a deep interest in both of these schools, and are contributing money to promote the improvement of the pupils, by furnishing articles that cannot be supplied and paid for under government regulations.

From the statements herein made it will be seen that the work of education among Indians has been largely increased, and the facilities now enjoyed will tend very materially to promote the work of Indian civilization. The interest of the Indian chiefs and ruling men in these educational movements is very great. They have already expressed a desire to send school committees from their tribes to see and report upon the progress and treatment of their children in the government schools, and permission to come east for that purpose will be granted to a limited number. The older Indians, and those experienced in the affairs of the tribes, feel keenly the want of education, and as a rule have favored all endeavors to educate their children, and it is a rare thing to find an Indian so benighted as not to desire to have his children taught to read and write in the English language.

Arrangements are now in progress for opening a school similar to the Carlisle school at Forest Grove, Oregon, for the education of Indian children on the Pacific coast.

INDIAN FREIGHTING.

In the month of July, 1878, it was proposed to the Sioux chiefs Spotted Tail and Red Cloud, in a council held with them at their old camp, to begin the work of their own civilization by removing their goods and supplies from the Missouri river, which they were about to remove, distant westward from the river. The Indian government should furnish them with the means to enable them to embark in the enterprise. The delay of the Indians and the lateness of the season, however, in the deliberation, to defer putting the plan into effect, should have been accomplished before the goods had been transported to the new location by the first winter. The department of making a trial of what was looked upon as a failure might deprive the Indians of the means to enable them to withstand the rigors of a

serious combination was made by combat was supposed to be the necessities of thereby extorting exorbitant rates for the removal of the goods from the Missouri to the two agencies. After the bids for transportation without obtaining a contract were determined to purchase four hundred and fifty sets of double harness, and to hire the teams to remove nearly 4,000,000 pounds of goods for a distance of nearly 150 miles. Even the boldest

ve been delivered in part; the remainder of the del
de as soon as spring is fairly opened. These cattle :
ollows: 1,100 to the San Carlos Agency, 100 to Sile
idge, 1,632 to Rosebud, 900 to Cheyenne and Arapah
Comanche, and Wichita; 817 to Osage, 400 to Pawn
ione and Bannack; 100 each to the Sac and Fox, a
200 each to the Western Shoshone, Flathead, and F
300 each to Crow Creek, and Ponca; and 500 each
ing Rock, Lower Brulé, and Blackfeet Agencies. The
and will be distributed only to such Indians as, in t
spective agents, will take the best care of them. Fro
the increase of this stock, in four years, will, with t
mount to nearly 50,000 head, from which it will be se
of the Indians in stock-raising and their ability to pro
emonstrated in a very brief time. These advantag
ion with the issue of agricultural implements and wage
correspond with the issue of cattle, will require but a
part of the government to complete the conditions nec
self-support. The only thing needful is to provide the
e title to lands in severalty, covered by a patent fro
, with protection against taxation and alienation.

GRANARIES AND ROOT HOUSES.

air natural state are exceedingly improvident, and wh
left to themselves, they might procure seed and raise
probability is that before the next planting season th
would be entirely exhausted. It is necessary, therefo
forethought in their behalf, and during the current ye
irected agents to construct granaries and root hous
on each Indian who has been engaged in farming
gency a sufficient amount of seed for the next crop.
nt gives a receipt for its safe-keeping. This of cou
sary for the agent to have a place of storage where t
ill be safe from destruction or frost.

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nt to absorb their whole year's crop, but also to demar
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e been enjoined not to give Indians credit, but to let the
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emaha, and White Earth

INDIAN POLICE.

y years since the general establishment of an Indian pol
proved to be exceedingly beneficial to the service. T
shown the utmost fidelity to the government, and, wh
arrested even friends and relatives with absolute imp
Pine Ridge Agency, on the 8th of September last

runner was dispatched from the camp of Young-Man-Afraid-of-his-Name to notify the agent of the escape during the night of eleven Cheyennes who had taken with them twenty-two head of horses and ponies belonging to the Sioux. Police Captain Sword, with nine of his men, was in pursuit, and the next day overtook the Cheyennes—who had had hours the start of the police—on Osage Creek west of the Black Hills about 125 miles distant from the agency. Sword and his party immediately surrounded the fugitives and demanded their surrender. Spotted Wolf, the leader of the runaways, refused, and threw off his blanket, which among Indians signifies a challenge to mortal combat. The police immediately opened fire on the party, killing Spotted Wolf. The remainder then surrendered, and after a two-days march were brought back to the agency. Many other equally noteworthy instances of fidelity have occurred, and as a whole, where agents have entered into the spirit of the system, the results have been of the best possible character.

There is but one drawback, which should be removed by Congress. The pay of policemen which is fixed by law at \$5 per month should be increased to \$15. The men enlisted in the police service are mostly heads of families, and \$5 per month is the merest pittance. Those engaged in other avocations at the various agencies are paid \$10. Teamsters, with their ponies, often earn \$30 per month. Especially at the larger agencies, where there is considerable police work to be done, the payment of the police should be increased as above proposed. At present considerable dissatisfaction is felt among the Indians on account of the scanty pay, and agents report great difficulty in keeping their quota of suitable men. This should not be the case, as our police force is necessary for the maintenance of order and good government at several agencies, and is of the highest importance in teaching the Indians habits of civilized life and eventual self-government.

MARRIAGES.

In my last annual report I recommended the enactment of a law to prevent polygamy, which prevails in almost every Indian tribe, and to provide for legal marriages among Indians. I can do no better than repeat that recommendation here:

An act of Congress should provide wholesome and proper marriage laws for all the Indian tribes. The agent should be required to marry all the Indians cohabiting together upon the various reservations, giving them a certificate of such marriage; and at the beginning of the next year no Indian should be permitted to marry more than one wife. White men cohabiting with Indian women should be compelled to marry them or to quit the reservation.

THE PONCAS.

As stated in my last annual report the Poncas were finally settled on both sides of the Salt Fork near its junction with the Arkansas River. The location is healthy and the soil fertile. There is everything in the surroundings of the agency to please the eye, and it is universally regarded as the best location for an Indian agency to be found anywhere in the country.

The Poncas are now doing well. Many houses have already been built, and by the 1st of January next the agent expects to have the whole tribe comfortably supplied with houses. They have been furnished with wagons and harness for freighting and farm purposes, and have

their own supplies from Wichita, Kansas. They have been supplied with horses and cattle for stock-raising, and also with agricultural implements sufficient for all the members of their tribe. A steam sawmill and a shingle-machine have been placed at the agency, and have been running continuously since March last. A school-house has been built and a school has been in operation for a considerable portion of the year. In brief, every thing possible has been done to promote their comfort and civilization.

As reported heretofore, these Indians suffered greatly in health by their removal to the Indian Territory, but they have now become acclimated and the health of the tribe has greatly improved.

By the treaty of March 12, 1858 (12 Stat., 997), the Ponca tribe of Indians ceded to the United States all the lands then owned or claimed by them except a tract in what is now the Territory of Dakota, which was reserved in said treaty as their future home. In consideration of such session the United States stipulated, among other things, "To protect the Poncas in the possession of the tract of land reserved for their future homes and their persons and property therein during good behavior on their part." By the treaty of March 10, 1865 (14 Stat., 675), certain cessions and exchanges were made by which the area of the Ponca reservation was reduced to 96,000 acres, to which diminished reservation the pledge of protection in the former treaty remained fully applicable, and was never forfeited on the part of said Indians.

The following bill was presented by the department to Congress on the 3d of February 1879:

A BILL For the relief of the Ponca tribe of Indians in the Indian Territory.

Whereas, by the treaty of March 12, 1858, the Ponca Indians ceded to the United States all the land then owned or claimed by them, except a tract in the Territory of Dakota, bounded as follows, viz: "Beginning at a point on the Niobrara River and running due north so as to intersect the Ponca River 25 miles from its mouth; thence, from said point of intersection up and along the Ponca River twenty—miles; thence due south to the Niobrara River, and thence down and along said river to the place of beginning": and in possession of which the United States agreed to protect said tribe; and,

Whereas, by the treaty of March 10, 1865, certain changes were made in the boundaries of the Ponca Reservation, as defined in the treaty of March 12, 1858, whereby their reservation was reduced to 96,000 acres of land; and,

Whereas, by the second article of the treaty of April 29, 1868, with the Sioux nation of Indians, the lands owned and then occupied by the said Poncas, under the provisions hereinbefore set forth, and on which they had valuable improvements in houses and cultivated lands, were without their consent ceded and conveyed by the United States to said nation of Indians; and,

Whereas provision was made in the act making appropriations for the current and contingent expenses of the Indian Department for the fiscal year ending June 30, 1877, for the removal of the Ponca Indians to the Indian Territory, which said removal has since been effected; and

Whereas said Ponca Indians at the time of their removal were obliged to leave all of their improvements and other valuable property, consisting of agricultural implements, etc., on their said reservation in Dakota, and for which they have received no compensation; and,

Whereas said Ponca Indians are now located temporarily on certain lands, which they desire to retain, within the territory west of the 96^o ceded by the Cherokee Nation to the United States by the treaty of July 19, 1866, for the purpose of settling other Indians thereon, but which lands they have no money to purchase as provided in said treaty: Therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized and directed to permanently locate the said Ponca Indians on the tract of land now occupied by them, embracing in the aggregate 101,894 acres, and to purchase the same for their use from the Cherokee Nation; said purchase to be made in accordance with the provisions of the Cherokee treaty of July 19, 1876.

EC. 2. That the sum of \$140,000 be, and the same is hereby, appropriated, moneys now in the Treasury of the United States not otherwise appropriated, disposed of for the benefit of said Ponca Indians as follows, viz, \$82,000, or as much as may be necessary, shall be expended by the Secretary of the Interior for the lands authorized herein to be purchased for the use of the Ponca Indians, and the balance of said \$140,000 remaining after the purchase of lands shall be invested in the four per cent. bonds of the United States and be a permanent investment for said tribe, the interest thereon to be expended annually in benefit in such manner as the Secretary of the Interior may direct.

EC. 3. That the amount appropriated herein shall be in full of all claims of the Ponca tribe of Indians against the United States for the lands and property heretofore ceded by them in Dakota Territory.

By the provisions of the above bill it will be seen that everything has been done for the Poncas, so far as this department can act. Lands were ceded to the Sioux by act of Congress, and proper repairs can only be made by the same authority.

CHIEF MOSES AND HIS PEOPLE.

During the summer of 1878 the settlers in Washington Territory were greatly excited by the restless condition of the Indians in their vicinity, leading up to the outbreak of the Snakes and Bannacks in the adjacent Territory of Idaho, and organized measures for self-protection among the white bands were considered necessary. Chief Moses and his people at that time were not on any reservation, were suspected by the settlers of being in sympathy with the hostile Indians, and also of having been accomplices in the murder of a man and his wife, named Perkins, who had been killed by a roving band of Columbia River Indians, under the influence of the notorious "dreamer" Smohallie. In the fall of 1878 Agent Wilbur was directed to use his best endeavors to induce Chief Moses and his band to go upon the Yakama Reservation. He accordingly called for Moses, who, on the plea that a separate reservation was being set apart for them, signed him, declined to go to Yakama until the decision of the Department in the matter could be had. He denied all personal knowledge of the Perkins murder, and offered to furnish guides to assist in the arrest of the guilty parties, who were then located about 40 miles from his camp.

A party of fifteen agency Indians and thirty white volunteers from Yakama City was formed, and it was arranged that Moses and his band should have one day's start of the party in order to make arrangements for crossing the Columbia River. On arriving with his men at the appointed place he found that the volunteers had proceeded to a place about twelve miles below. This fact, coupled with reports which had reached him in the mean time that the whites had planned to waylay him on the way home, and that the police and volunteers intended to arrest him and confine him in jail at Yakama, aroused his suspicion. He failed to furnish the guides as agreed, and confronted the volunteer party in an apparently hostile attitude with about sixty armed men. After a parley, which resulted in both sides withdrawing without bloodshed, Moses returned to his camp, but three days later started a number of his men (as he states) to join the party in the capture of the murderers. Before reaching them he encamped for the night, and the volunteers who were in that vicinity, mistaking their camp fires for those of the murderers, surrounded the camp and took Moses and his nine men as prisoners. All were disarmed; five went after the murderers, the rest of the party, one of the murderers having killed himself to avoid arrest, and the remaining four men were taken to Yakama City and confined in jail without any formal examination. A week later Agent V

persuaded the citizens to allow him to take them in charge, and, under guard to prevent the excited settlers from killing him, Moses and his men were taken to the agency, where they remained for three months despite the repeated and strenuous efforts which were made by the citizens to take Moses out of the agent's custody and return him to jail.

On the 12th of February last the department ordered Moses and his party to Washington for a conference. This order was communicated to the Yakama authorities, and upon their agreement not to disturb or arrest him he was allowed to return to his people and make the necessary arrangements for his journey to Washington. At the expiration of ten days he was sent for, and returned word that he would meet the agent at the Yakama Ferry in four days. Upon arrival at the ferry, the agent found the county sheriff with a posse guarding every crossing on the river for twenty miles or more, with a sworn determination to take Moses dead or alive. Finding that he could do nothing, the agent returned to Yakama City, and the next morning the chief was brought in by the sheriff. Court was called, and Moses was arraigned as accessory to the murder of the Perkins family. The prosecution, on the plea that they were not ready, asked adjournments, first for twenty-four hours and then for eight days. It becoming apparent that delay was asked solely for the purpose of preventing Moses from proceeding to Washington and of keeping him in jail until the October term of court, the agent proposed to waive preliminary hearing and enter bail for his due appearance at court. His proposition was accepted, and Moses came to Washington.

Several conferences were held with him, which resulted in the issuance of an executive order dated the 19th of April, 1879, setting apart for himself and his people a reservation, called the Columbia reservation, which adjoins the Colville Reserve in Washington Territory. The delegation returned to Vancouver with a special request to the governor of the Territory and the general commanding the department to see that they were forwarded to their new home without arrest or further interference by the whites. Moses has since expressed himself as being perfectly satisfied with the location provided.

It was deemed expedient to accede to the earnest desire of Moses to have a new reservation set apart for his occupancy, because of the hardship and unjust treatment to which he had been subjected and in acknowledgment of his valuable services in controlling the disaffected and in preserving the peace during the excitement occasioned by the hostilities of the Bannocks. By this arrangement an expensive war was undoubtedly avoided.

The Indians concerned in the Perkins murder were tried at the last (October) term of the circuit court of Yakama County, Washington Territory, and three of them were condemned to death. The charge against Chief Moses was pressed for days and some sixty or more witnesses were examined; but no bill against him could be found. He was thereupon discharged and his bondsmen released.

THE REMNANT OF DULL KNIFE'S BAND.

In the last annual report of this bureau mention was made of the departure of a party of about three hundred Northern Cheyennes, under Red Bull, from the Cheyenne and Arapaho Reservation in the Indian Territory in September, 1878, and of the fact that on their way through they murdered more than forty men, women, and children, and committed other outrages. At the date of said report the portion of

those Cheyennes who had surrendered to the military were held as prisoners at Camp Robinson, Nebr., and the War Department had been requested to send them to Fort Wallace, Kans., in order that the civil authorities of that State might identify and properly punish the parties guilty of crimes committed in the raid through Kansas. The headmen of the Cheyennes then in confinement at Fort Robinson were notified by the military on the 3d of January that the authorities in Washington had decided to send them back south. The next day, after consultation with the rest of the captives, Wild Hog, spokesman, gave an unequivocal negative to the proposition regarding their intention to die before complying with the order. The prisoners numbered at this time forty-nine men, fifty-one women, and twenty-eight children. It was then attempted to starve and freeze the captives into submission, and for five days they were deprived of food and fuel, and for three days of water also. This experiment proved ineffectual, on the 9th of January it was decided to arrest Wild Hog, the leader of the opposition. He was with difficulty induced to leave the prison, and after a struggle, in which a soldier was slain, he was ironed. Upon this the Indians in the prison barricaded the doors, covered the windows with cloth to conceal their movements, raised the floor, and constructed rifle-pits to command all the windows. As early as November 1, 1878, Red Cloud had requested that the lives of the prisoners be taken from these prisoners to prevent them from taking their own lives in case they should be ordered South. This, however, was not to have been done, neither had they been wholly disarmed, for they were the possessors of at least fifteen guns (in addition to the weapons obtained from the dead sentinels) and some revolvers, and were well armed with knives.

About 10 o'clock on the night of January 9, the Indians commenced firing upon the sentinels, killing two and wounding a corporal. They made their escape through the windows, the soldiers being driven in front of the men in their flight. They were pursued by the troops, and most of their number were eventually killed. The survivors were taken to Kansas for the identification of those who had been accused of murder and outrage, and Wild Hog and six others were indicted in the courts of that State. When the case was called, a nolle prosequi was entered, thereby dismissing the case; the prisoners were set at liberty, and they accompanied their agent to the Indian Territory.

LITTLE CHIEF'S BAND OF CHEYENNES.

Little Chief and his band of Cheyennes, numbering about 200, left the Army Barracks on their way to the Indian Territory October 20, 1878, and arrived at the Cheyenne and Arapaho Agency on the 9th of December. It seems that Little Chief and his band were traveling peacefully southward at the same time that Dull Knife and his band were raiding in the opposite direction. Fortunately the two bands did not meet or strike hands.

In March last information was received that these Indians were dissatisfied and were about to break out on the war-path. As the matter seemed serious enough to warrant it, Little Chief and five others were permitted to come to Washington in May last and present their case. They stated that they had been informed by military officers at Fort Union enough that if on arrival at the Indian Territory they were not permitted to stay in the country they might return to the north. Little Chief was earnest in the presentation of his case, and was sustained by the members of the delegation. For some time it appeared doubtful whether

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they would voluntarily consent to by perseveringly following the requirements of the law in their retained, and they went back to the intention of remaining there quite far done.

THE OUTBR

By the treaty of March 2, 1861, the Ute Reservation in Colorado, the Tabeguache and Muache bands were moved north for the Yampa, Grand River game on and near the reservations provided under treaty on the time when they should be a means of subsistence. Owing to the whites and loyalty to the government the reservation gave comparative encouragement by those who wished to purchase peltries which the Utes annually had no difficulty in obtaining in exchange for whiskey which were denied them.

The Los Pinos Utes, under the agency, have yielded more readily inclined to make a small beginning on the River. The latter, moreover, for two factions, under rival chiefs existed, and any measure proposed by one party to be opposed by the other.

The geographical position of the reservation was chosen at all. It can be reached by road, which during some seasons is freight but little over two months only from four to six months if the road is broken; is out of the line of abounding in game, is in most respects favorable. Under these circumstances it is the White River Utes to be a reservation upon whom civilization had had no effect.

Soon after his appointment, Agent A. moved the agency from its old site to a more favorable climate and more arable land and a better opportunity for putting the reservation accordingly removed, new buildings and irrigating ditch was dug with the help of especially those of Douglas's band. The rival chief Jack, however, was still remained with his people and attempts to interest him in any improvement.

During last winter and spring the agent, both to this office and to his Indians from their reservation.

Sir: I am informed that some time ago, north, having heard of the fighting

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of July, when they were on their way south toward their agency by way of North Park. These Indians—about 50 in number—were very peaceable and polite, and did not commit any depredations, or show any hostility towards any of the settlers in this country. There were fires set about this time in the timber, but it is not known how they originated. I have, since their departure, learned from Mr. John Le Fevre, of North Park, that another band of these Indians were in North Park in June, and that some of the miners talked of driving them off, but on conversing with White Antelope, their chief, they learned that the Indians did not wish trouble, and they immediately left. This is all I know or have heard of this subject.

GREY NICHOLS.

Maj. T. T. THORNBURGH,
Fourth Infantry, Fort Fred Steele, Wyo.

FORT STEELE, WYO., July 26, 1879.

SIR: Referring to your inquiries as to the doings of the Utes, who were lately in the Platte Valley, south of this post, I would respectfully state that a party of White River Ute Indians camped on Beaver Creek, June 30, they being then on their way south, and that they crossed the Colorado line July 1. During their stay on the Platte, they killed considerable game, but offered no violence to settlers, nor did they, so far I have been able to learn by diligent inquiry, set fire to any grass or timber in this country.

I have traveled all through the country referred to since the 1st of July, and am satisfied that had any violence been committed by the Indians, I should have heard of it.

Very respectfully,

J. M. HUGUS.

Maj. T. T. THORNBURGH,
Commanding Officer, Fort Fred Steele, Wyo.

[Fourth indorsement.]

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,

Chicago, August 6, 1879.

Respectfully forwarded to the Adjutant-General of the Army, inviting attention to the indorsement of General Crook, and report of Major Thornburgh.

P. H. SHERIDAN,

Lieutenant-General Commanding.

On the 15th of July, in reply to office telegram of the 7th, the agent reported that the mission of Chief Douglass and the employé had been successful; that Middle Park had been vacated by the Indians; and that they were returning to the agency. He also stated that the Indians had no appreciation of the value of forests, and in order to obtain dry fuel for winter use, or to drive the deer to one place where they might be easily killed, fires were lighted, by which large tracts of valuable timber were burned over, to the great exasperation of settlers. To this communication the office replied as follows:

DEPARTMENT OF THE INTERIOR,

OFFICE INDIAN AFFAIRS,

Washington, August 15, 1879.

of your letter, dated 15th ultimo, relative to the departure of Middle Park, their destruction of grass, timber, &c., and reference of the 23d ultimo, directing you to "take a decided stand against further depredations," have to state in addition that character have been made to the office in regard to the fires the Indians, as you have been advised by office letter of the heedless and lawless acts, unless checked, will lead to collision and the Indians. You will, therefore, if possible, ascertain the depredations to which you refer, and have them arrested adequate punishment. Examples must be made of some of these from similar outrages.

you state incidentally that after the Indians have received of annuity goods "they will depart and roam over a country where settlers are struggling to make new homes, and that because they are, as they boast, peaceable Indians."

It is directed to adopt, without delay, decisive measures to put a stop to the depredations of your Indians. Office instructions embraced in the circular regard to their being treated as hostile Indians and liable to

the traffic carried on with the Indians by the traders in the locations indicated, whose stores the renegade Utes of Northern Colorado and hostile Bannocks in Southern Idaho and Wyoming Territories, with other lawless bands, have procured and supplies of ammunition. Two years since, Capt. Charles Parker, U. S. A., stationed at Fort Steele, was directed on the recommendation of this office, to make an investigation of affairs on the Bear River, with a view to the establishment of a military post there to protect the settlers and break up the lawless traffic with the Indians and keep them upon their reservations. After a thorough investigation of the matter the officer, together with the agent of the White River Agency, reported strongly in favor of the measure, and on the 19th of September, 1877, copies of the papers were transmitted to the department, with a view to securing the necessary action on the part of the War Department; but the views of the General of the Army were then adverse to the recommendation of the officer, and the evils complained of have since become more widespread and serious in their character.

The agent urges the necessity of the employment of a military force to overawe and restrain the Indians, and to break up the traffic referred to on Snake and Bear Rivers, and it is respectfully recommended that his communication be referred to the honorable the Secretary of War, with the request that he cause the necessary orders to be issued to the commandant at Fort Steele to detail the requisite number of troops for the purposes indicated.

Very respectfully,

E. J. BROOKS,

Acting Commissioner.

The Honorable the SECRETARY OF THE INTERIOR.

About the 25th of August, the sheriff of Grand County went to the White River Agency with warrants for the arrest of two Indians charged with burning a house on Bear River, belonging to a man by the name Thompson. In regard to this the agent states: "I attempted to get Chi Douglas to assist, so that these culprits might be found, but he refused, saying he knew nothing about them and he would do nothing. As yet he has been extremely friendly; he sends his boy to school and he worked all summer. The Indians were not found and the sheriff and posse of four returned."

Early in September a difficulty occurred between the agent and the Indians on a matter of plowing, of which the agent made the following report:

UNITED STATES INDIAN SERVICE,
WHITE RIVER AGENCY, COLORADO,
September 8, 1879

SIR: We had recently finished plowing an 80-acre field, all inclosed; then we irrigated a piece of adjoining land, and upon which the agency buildings stand at a corner. This parcel lies between the river and the street coming to the agency, and embraces probably 200 acres, and the plan was to devote 50 acres next the street and agency to tilled crops and the remainder to grass land, and to inclose the whole with one common fence. First, it is necessary to have fields contiguous, that fences may be watched and depredators kept in check, and also to make the work of irrigation as inexpensive as possible, since to carry water far involves heavy outlays, besides being attended with the greatest difficulties by reason of uneven ground. In short, the described parcel was every way fitted for the object stated, and the new location of the agency was made with a view of utilizing and improving this particular land.

When we commenced plowing last week, three or four Indians objected. They had set their tents down towards the river, and corrals had been built, though I had previously told them the ground would be plowed. I offered to move their corrals to another place, and showed them other places, of which there are many equally good and suited to consider. This land is good, and being close to the agency, it is objected; in short, they simply need the ground for their horses. No doubt is evident that if I could have moved the agency buildings two or three miles, they could come and claim equal squatters' rights there also, and I told them they replied, that I had land enough plowed, and they wanted all the rest.

Still they did indicate that I might plow a piece farther away, covered with greasewood, intersected by bluffs and badly developing alkali, which would take three months to clear the surface. They would listen to no reason, and seeing no help for it, since if they could drive me from one place they might quickly drive me from another, I ordered the plows to run as I had planned. The first bed had been laid out and watered, 100 feet wide and half a mile long. The plowman got to the upper end two Indians came out with guns:

On the same day the office telegraphed Agent Meeker:

War Department has been requested to send troops for your protection. On their arrival cause arrest of leaders in late disturbance and have them held until further orders from this office.

Report full particulars as soon as possible.

To which he replied on the 22d:

Governor Pitkin writes, cavalry on the way. Dispatch of 15th will be obeyed.

On the 22d of September the office received the following telegram from the honorable Secretary of the Interior, relative to the arrest of two Indians against whom warrants had been issued:

DENVER, COLO., September 21, 1879.

HON. COMMISSIONER OF INDIAN AFFAIRS:

SIR: Two Indian Utes, Bennet and Chinaman, have been identified as having burned down citizen's houses outside of reservation; warrants are out against them. Agent Meeker should be instructed to have them arrested and turned over to civil authorities; efforts should also be made to identify Indians having set fire to forests outside of reservation. On consultation with governor and others, I am advised that settlement of Utes in severalty will be possible, on or near location now occupied by them, if properly managed. Steps to that end should be initiated as fast as possible.

C. SCHURZ.

On the 23d Agent Meeker was instructed by this office as follows:

Secretary telegraphs from Denver that two Ute Indians, Bennett and Chinaman have been identified as having burned down citizens' houses outside of reservation. Warrants are out against them. Agent Meeker should be instructed to arrest and turn them over to civil authorities; also, to identify and arrest Indians having set fires to forests. You will act on Secretary's suggestion, calling on military for assistance if necessary.

To this the agent replied by telegraph dated September 26:

Would say to yours 23d September; if soldiers arrest Indians and go away, I must go with them. Soldiers must stay. Large bodies of Indians leaving for the north to hunt. They insisted I should give out blankets now. I refused. Trade in gun and ammunition on Bear and Snake Rivers brisk. Company D, Ninth Cavalry, at Steamboat Springs, waiting instructions, which came to-day from General Hatch and are forwarded to-day by employé.

The employé who carried to Captain Dodge the dispatches referred to was thus absent from the agency at the time of the massacre, and is the only male employé who escaped death.

On the 25th of September, Major Thornburgh, who was *en route* to the agent, sent the following to Agent Meeker:

HEADQUARTERS WHITE RIVER EXPEDITION,
CAMP ON FORTIFICATION CREEK,
September 25, 1879.

MR. MEEKER,

Indian Agent, White River Agency, Colo.:

SIR: In obedience to the instructions from the General of the Army, I am *en route* to your agency, and expect to arrive there on the 29th instant, for the purpose of affording you any assistance in my power in regulating your affairs, and to make arrests on your suggestion, and to hold as prisoners such of your Indians as you desire, until investigations are made by your department.

I have heard nothing definite from your agency for ten days, and do not know what state of affairs exists—whether the Indians will leave at my approach or show hostilities. I send this letter by Mr. Lowry, one of my guides, and desire you to communicate with me as soon as possible, giving me all the information in your power, in order that I may know what course I am to pursue.

If practicable, meet me on the road at the earliest moment.

Very respectfully, your obedient servant,

T. T. THORNBURGH.

To this Agent Meeker replies, under date of September 27, 1879, as follows:

SIR: Understanding that you are on the way hither with United States troops, send a messenger, Mr. Eskridge, and two Indians, Henry (interpreter) and John Ayerley, to inform you that the Indians are greatly excited, and wish you to stop at some

convenient camping-place, and that you and five soldiers of your command go to the agency, when a talk and a better understanding can be had. This I agree to do not propose to order your movements, but it seems for the best. They seem to consider the advance of troops as a declaration of real war. In laboring to undeceive them, and at the same time to convince them they can do whatever they please. The first object now is to allay apprehension.

Respectfully,

N. C. MEEKER
Indian

On the 26th of September Major Thornburgh telegraphed to department commander from Bear River:

Have met some Ute chiefs here. They seem friendly and promise to go with agency. Say Utes don't understand why we have come. Have tried to explain satisfactorily. Do not anticipate trouble.

On the 28th of September Major Thornburgh wrote the agent as follows:

SIR: I shall move with my entire command to some convenient camp within striking distance of your agency, reaching such point during the 29th. Then halt and encamp the troops and proceed to the agency with my guide and soldiers, as communicated in my letter of the 27th instant.

Then and there I will be ready to have a conference with you and the Indians that an understanding may be arrived at and my course of action determined. I have carefully considered whether or not it would be advisable to have my command at a point as distant as that desired by the Indians who were in my camp last night. I have reached the conclusion that under my orders, which require me to maintain my command to the agency, I am not at liberty to leave it at a point where it would be available in case of trouble. You are authorized to say for me to the Indians that my course of conduct is entirely dependent on them. Our desire is to avoid war and we have not come for war.

I requested you in my letter of the 26th to meet me on the road before I reach the agency. I renew my request that you do so, and further desire that you bring the chiefs as may wish to accompany you.

To this Agent Meeker replied under date of September 29, 1891:

DEAR SIR: I expect to leave in the morning with Douglas and Serrick to make things peaceable, and Douglas flies the United States flag. If you have trouble getting through the cañon to-day, let me know in what force. We have been here three nights and shall be to-night, not because we know there is danger, but there may be. I like your last programme; it is based on true military principles.

On the same day, and probably before the receipt of Major Thornburgh's letter of the 28th, the agent telegraphed this office:

SIR: Major Thornburgh, Fourth Infantry, leaves his command 50 miles distant to-day with five men. Indians propose to fight if troops advance. A fight expected to-morrow. Captain Dodge, Ninth Cavalry, is at Steamboat Springs orders to break up Indian stores and keep Indians on reservation. Sales of ammunition and guns brisk for ten days past. Store nearest sent back 16,000 rounds of guns. When Captain Dodge commences to enforce law, no living here without his orders. Have sent for him to confer.

The employé who was bearer of the dispatches to Captain Dodge, in reference to breaking up the sale of ammunition to Indians reports that the Indians whom Major Thornburgh met on the 26th were a band of Indians under Jack, who camped with the soldiers on the night of the 25th. Friday. The next day he met Jack and his ten men at 11 a. m. on the road between Bear River and Williams's Fork, and was informed by Jack that 190 soldiers had just passed *en route* to the reservation, and he asked for what purpose they had come. This seems to have been the first intimation that soldiers had been sent for, and from a telegram sent by the agent to Governor Pitkin, it appears that the agent considered it important that the call for troops should be kept concealed from the Indians.

As will appear from the above dispatches, the Indians again

up on the 27th instant, with a proposition that miles distant and come with five men to the . The proposition being refused, the Indians advance with all his troops as an act of war, reservation line at Milk Creek—a point about agency—and was about to enter a cañon, a body of Indians were discovered, who opened upon the fighting as they went, the command fell back as it was coming up in the rear. In this retreat several others were killed. Horses, wagons, and were immediately used for breastworks, while the rising bluffs kept up a galling fire. In this demand under Captain Payne held its own until October, when it was re-enforced by Company D, under Captain Dodge. This single company of fought the fight, made forced marches, without orders, to the relief of the survivors.

The news of the battle reached headquarters, troops were ordered to Milk Creek, and on the Colonel Merritt arrived there with 600 men. He lost 12 killed and 43 wounded. The combined force held the agency, where they found only dead bodies

with Major Thornburg was conveyed by runners to the agency, and the agent's letter of the 29th had hardly been dispatched when the massacre of began. All the men, eight in number, were shot; the agent and the wife of one of the employes, took refuge in an adobe building and remained until the buildings were fired. They then took the Indians were busily engaged in helping themselves, to escape to the sage-bush, but during their flight were fired upon by the Indians, Mrs. Meeker receiving several wounds. She and her children were then taken captive and conveyed by the journey of several hours, to the camp to which among the Indian women and children had been sent those who were coming up with Indian goods at the time were also killed. The Indian report their loss in stock on the troops as 23, and afterwards in their lives and the freighters as 14.

There were transpiring among the White River Utes, and had started out on a two months' hunt; but, from an Indian runner of the massacre and the news he hastened back to his agency in great anxiety and immediately issued the following order:

LOS PINOS INDIAN AGENCY,
October 2, 1879.

and Utes at the White River Agency:

and commanded to cease hostilities against the whites, or any others farther than to protect your own lives and unauthorized combinations of horse-thieves and desperadoes ultimately end in disaster to all parties.

OURAY.

The following message was sent to the agent of the

I should say to you, and through you to the whites and bear any danger from the trouble at White River; that he

wants his people—the Utes—to stay at home and lend no hand or encouragement to the White River Utes; that the troubles there will be over in a few days; that he sent Soponevaro and others to White River to stop the trouble; and that outside interference will only tend to aggravate and do no good.

Very respectfully,

WM. M. STANLEY
United States Indian Agent

Upon this the Southern Utes held formal council and expressed determination to take no part in the hostilities of the northern Utes. On the 9th of October, Ouray's courier returned with the report that the White River Utes had listened to the order, had stopped fighting, and had moved with all their effects to Grand River.

This information was conveyed to the office in the following telegram of the same date:

Employé Brady and escort of Indians arrived from White River, reports Utes civilized and obeyed Ouray's order, withdrew, and will fight no more unless forced to do so. If soldiers are now stopped trouble can be settled by peace commission to investigate facts, and let blame rest where it may. This will save life, expense, and distress if it can be accomplished.

STANLEY, A.

I concur and indorse the above.

OURAY
Head Chief Ute Northern

In reply thereto the department telegraphed Agent Stanley, October 13, as follows:

Your dispatch received. Tell Ouray that his efforts are highly appreciated by the government. In view of the attack made upon the troops and massacre of agency employes the troops will have to proceed to White River Agency. Ouray should endeavor to prevent any resistance to this movement. The troops are now in great danger and resistance would result only in great disaster to the Indians. The hostiles have to surrender and throw themselves upon the mercy of the government. Guilty parties must be identified and delivered up. We shall see that no injury is done any one. Peaceable Indians will be protected. Ouray's recommendation of mercy in individual cases will be respected as far as the general interest may require. Special agents are being dispatched to Los Pinos with further instructions.

C. SCHURZ, Secretary

These terms were in accordance with article 6 of the Ute treaty of 1868, which provides that:

If bad men among the Indians shall commit a wrong or depredation upon the person or property of any one, white, black, or Indian, subject to the authority of the United States and at peace therewith, the tribes herein named solemnly agree that they will, on proof made to their agent and notice to him, deliver up the wrongdoers to the United States, to be tried and punished according to its laws.

An inspector was despatched to the Los Pinos Agency, and General Charles Adams, former agent for the White River Utes, was detailed as special agent to visit the hostile camp, with an escort furnished by the troops to demand the surrender of the captive women and children, the murderers of the employes, and those engaged in the attack on Major T. J. Burgh. During these negotiations the troops were instructed by the Department to proceed no farther than the White River Agency and to remain there until further orders. General Adams was well treated by the hostiles, and after a long and stormy council the captives were delivered to him without conditions, and on the 21st of October he arrived at Ouray's house, where every possible arrangement for their comfort had been made by himself and wife. On his return from General Merritt's camp two more visits were made by General Adams to the hostile camp to demand the surrender of the guilty parties, and on the 29th of October he reported that the Indians appeared willing to

the guilty punished, and recommended that a commission be appointed to make an investigation, Ouray being in favor of the plan and agreeing to have the White River Utes in attendance.

Meantime the department had already sent to General Adams the ultimatum which was to be offered the White River Utes, viz: that they remove their camp temporarily to the neighborhood of Los Pinos; that a commission consisting of Brevet Major-General Hatch, General Adams, and Ouray meet at Los Pinos as soon as possible, to take testimony to ascertain the guilty parties—the guilty parties so ascertained to be dealt with as white men would be under like circumstances; and that the mischievous element in the White River band be disarmed.

This was accepted by the White River Utes, and on the 10th of November twenty of their chiefs and headmen, in obedience to Ouray's order, came to his house to meet General Adams. The others, whose camp was located 50 miles distant on the Gunnison River, were expected soon. Latest advices are that the commission is now organized, and that Johnson, Douglas, and Sawawick are giving testimony. • The testimony of officers who were engaged in the battle at Milk Creek, and the testimony of the captive women will also be given before this commission. Every effort to arrive at all the facts and to mete out exact justice will be made. Troops are stationed at Fort Garland in the south as well as at White River Agency in the north, ready for prompt action in the event of the possible failure of the commission.

The atrocity of the crimes committed should not prevent those individuals who are innocent from being treated as such, according to article 17 of the treaty, viz:

Chief of either of the confederated bands make war against the Utes, or in any manner violate this treaty in any essential part, shall forfeit his position as chief and all rights to any of the benefits of this treaty. Any Indian of either of these confederated bands who abides by the terms of this treaty in all its essentials, shall be protected in his rights and provisions, notwithstanding his particular chief and rights thereto.

The services thus far rendered by Ouray have been of inestimable value, and while the White River Utes have shown the very worst aspect of savage life, Ouray has shown courage and humanity and virtues of the better type, which should somewhat relieve the name of Ute from the odium cast upon it by the northern bands, for whose brutal and barbarous acts, whatever the provocation, no justification can be found.

In my annual report for 1877 I made the following statement of the case:

I recommend the removal of all the Indians in Colorado and Arizona to the Indian Territory. Colorado, gold and silver mines are scattered over a wide extent of country to be found in every conceivable direction, running into Indian reservations. Hence miners will follow the various leads and prospect new ones without regard to barriers set up by an Indian reservation. Hence the sojourn of Indians will be sure to lead to strife, contention, and war, besides entailing expense to feed and provide for them. Again, there is no hope of Indians while they reside in Colorado, as all the arable land in the Territory is taken by white settlers. A mining population needs in its immediate vicinity facilities for agriculture to feed it. The question of feeding the Territory of the State is one of paramount importance, and will certainly attract the attention of the government.

Office report for 1878 the following extract will be found running on the present issue:

The Territory covers nearly 12,000,000 of acres, and fully one-third of the best land in the State; and it is situated in the heart of one of the richest mining States. The mining population naturally want the arable land

THE UTE COMMISSION OF 1878.

As was stated in the report of last year, the Ute commission appointed May 24, 1878, obtained from the Capote, Muache, and Weeminuche Utes, who occupied the southern strip of the Ute Reservation, an agreement to relinquish all that part of the reserve lying south of parallel 38° 10', and to remove to a reservation on the headwaters of the Piedra, San Juan, Blanco, Navajo, and Ohama Rivers, in Southern Colorado, as soon as the agency could be removed thither and buildings erected. The cession was concurred in by all the other bands of Utes. The area proposed to be ceded embraces about 1,894,400 acres, an excess of 728,320 acres over the proposed new reserve of 1,166,080 acres.

The report of the Commissioners, together with the agreement, which will be found on pages 170 of this report, was forwarded to the President, February 3d, 1879, for submission to Congress, with the recommendation that the agreement be ratified, and that Congress provide for the appraisal and sale of the lands ceded; the proceeds thereof, after deducting expense of such sale, to be invested for the benefit of the Indians. No action on the matter was taken by Congress.

The Commission also endeavored to obtain the cession of the tract four miles square which contains a part of the Uncompahgre Park; but the Utes refused to have anything to say on the subject unless a delegation could be sent to Washington for that purpose. Permission for the visit was therefore given, and a delegation visited this city in January last. They agreed to part with that portion of their reservation for \$10,000. The matter was submitted to Congress, with request that the necessary sum for the purchase be appropriated; but no action was taken. The tract referred to is for the most part fine agricultural land, which is greatly needed by the people of Colorado, and white settlers have already gone in considerable numbers. It is a matter of difficulty, if not impossibility, to remove these settlers and prevent others from going in and occupying the land; and if the Government is not paid for the Indians will justly consider such settlements as encroachments. The Indians most interested in the cession are the Pinos Utes, and in view of their good conduct during the war, and their friends and relatives, it is important that their loyalty be subjected to unnecessary tests. I, therefore, hope that the matter will not fail to receive the early and favorable consideration at its next session.

VICTORIA AND THE SOUTHERN APACHES.

In 1871 about 1,200 Mogollon, Miembre, and Gila Apaches, known under the general name of Southern Apaches, were collected in the vicinity of the Mexican town of Cañada Alamosa, in Southwestern New Mexico. They had no reservation, had been accustomed to roaming and marauding, and the scanty rations which were then being issued weekly were insufficient for their subsistence, and had to be supplemented by hunting. The Indians chose to adopt. For these Apaches a reservation in the valley of the Tularosa River was selected by Hon. William D. Felt, and set apart by executive order in the fall of 1871. When the object of removal thither was broached, the majority of them went away, many of them to the Chiricahua Reserve in Arizona. Those who were prevailed upon to remove to the new reservation were thoroughly displeased with the location,

re absent from the reserve during many months of the year, and generally unsettled, indolent, and intractable.

In the fall of 1874 the Hot Springs Reservation, near Cañada Alamo, was set apart, and the Indians removed back again to their old haunts, and were occasionally joined by other bands till their number was nearly doubled. A small detachment of troops was kept at the agency, and the Indians remained comparatively quiet, but were not to commit themselves to farming or schools. Between them and their relatives, the Chiricahuas, in Arizona, frequent visits were exchanged, and there is little doubt that Hot Spring Apaches gave assistance to the Chiricahuas in their raids into Mexico.

At the time of the abolishment of the Chiricahua Reserve, in June, 1875, less than half of the Indians belonging there were taken to San Carlos. The rest removed themselves to the Hot Springs Reserve, and the rest, about 100, under renegade leaders, escaped to the mountains, and from there made raids on the settlers in Southeastern Arizona. In March, 1876, it was definitely ascertained that not only were the renegades re-enforced by the Indians from the Hot Springs Reserve, but, also, that that reserve was being used as a harbor of refuge for the outlaws. Accordingly, with the San Carlos Indian police force and the co-operation of the army, the Southern Apaches, to the number of 453, were removed in July, 1877, to San Carlos; several prominent raiders were arrested and punished; the remaining Indians of the agency were declared renegades, and the reserve was restored to the public domain.

On the 2d of September, 1877, a majority of the Hot Springs Indians, and a portion of the Chiricahuas, about 300 in all, suddenly left the San Carlos Reserve. They were pursued and overtaken next day by volunteers from the agency Indians, but only 30 were brought back. The renegades then struck a settlement in New Mexico, killing 8 persons, and stealing some horses, and forthwith all the available troops in that territory were put into the field against them. In October, finding themselves unable to hold their own in a country thoroughly occupied by United States soldiers and Indian scouts, 190 surrendered at Fort Huachuca; others surrendered later, and all, to the number of 260, were taken back to the Hot Springs Reserve in New Mexico, and there remained under the charge of the War Department.

In August, 1877, the Interior Department recommended that the Indians be returned to San Carlos, and in October arrangements were made with the War Department for the necessary detail of troops to serve as escorts during the removal. While bringing the Indians from their camp at the Hot Springs to starting for San Carlos, 80 made their escape to the mountains. The others protested against going to that reservation, declaring their unwillingness to go anywhere else; but they were removed there without difficulty.

In December, 63 of the tribe, who had been wandering in the mountains, came into the Mescalero Agency in a most destitute condition, and were allowed to remain there.

In February, 22 under Victoria, who had been spending their time more pleasantly in old Mexico, came near the military post at Fort Huachuca and had a talk with the commanding officer. Victoria expressed his intention to surrender at that post provided Nauna's band, the Mescalero, might be allowed to join him. Accordingly, two of his men, with a pass good for fifteen days proceeded to Mescalero, reported to the agent, and conferred with their relatives there; Victoria and the rest of the band remaining quietly at the post in the mean time. The messengers returned at the time specified, but do not seem to

succeeded as well as they had expected, for the commanding officer, on February 16, reports only 39 Hot Spring Apaches as having surrendered with Victoria as prisoner of war, all of whom reiterated their determination to resist to the death any removal to San Carlos.

It was then decided to remove the band to Mescalero, but they declared themselves as bitterly opposed to Mescalero as to San Carlos, and on the 15th of April last the whole party again escaped to the San Mateo Mountains.

On the 30th of June, Victoria, with thirteen men, came into Mescalero Agency and had a conference with the agent, who endeavored to remove their constant fear of being sent to San Carlos, and assured them of protection and kind treatment if they would come to Mescalero and *stay there*. The band, numbering 28, accordingly came on the reserve and were enrolled among the other Southern Apaches at the agency. The purpose of these Indians to settle down and remain quietly at Mescalero seemed so sincere, that, at their earnest request, arrangements were made for bringing to them from San Carlos their wives and children, from whom they had long been separated.

In July last, three indictments were found against Victoria in Grant County, New Mexico, two for horse-stealing and one for murder, but no attempt seems to have been made on the part of the authorities to arrest him. The Indians, however, were aware of these indictments, and when a few days later a hunting party, which included a judge and a prosecuting attorney, passed through the Mescalero Reservation, the Indians, who were well acquainted with the official position of those gentlemen, believed the visit to be a preliminary step to the arrest of Victoria, and possibly of his whole band. The band, therefore, suddenly left the reservation, taking with them all the other Southern Apaches. They went west, and began again their old life of marauding, and though promptly followed up by the military, who have chased them across the line into old Mexico, their raid has caused much destruction both of life and property.

JOSEPH'S BAND OF NEZ PERCÉS.

The unfortunate band of Nez Percés under Joseph have finally found a resting-place 15 miles west of the Ponca Agency in the Indian Territory. They are located at the junction of the Shakaskia River and the Salt Fork. The country is sufficiently well wooded, and the land is of the best quality. The agent is engaged in putting up agency buildings and houses for the Indians. Yellow Bear, the second chief, shows a very good disposition, and is actively at work doing all he can to promote the welfare of his band.

The health of the tribe is greatly improved, and it is hoped that they will now settle down and become contented. They have been supplied with wagons, agricultural implements, and horses, and cows have also been provided for them.

MISSION INDIANS.

The necessity for early legislation to provide a suitable and permanent home for the Mission Indians of California is urgent. They are estimated to number about 3,000, and are scattered in small bands over San Diego, San Bernardino, and Los Angeles Counties, earning a precarious livelihood by cultivating small patches of land, and working for ranchmen and white settlers when opportunity offers. Many of them are now

will be modified gradually as the influence of the "medicine man" is succeeded by that of the intelligent and sympathetic physician.

CONSOLIDATION OF AGENCIES.

In the last annual report, the policy and economy of consolidating many of our Indian agencies was urged at length, with the recommendation that the surplus lands be sold, and the proceeds thereof be used for the benefit of the Indians.

During the current year the Omaha and Winnebago agencies have been consolidated, and the Red Lake and Leech Lake agencies have been consolidated with the White Earth Agency; the Flandreau Agency has been put in charge of the agent for the Santees. These movements are in the right direction, and there should be many more of like character. By the concentration of Indians the time needed to civilize them may be shortened, and the sale of their lands will contribute largely to their support in the future.

The carrying out of this policy in the consolidation of the Chippewas in Wisconsin, as provided in House bill 1139, first session Forty-sixth Congress, would be especially beneficial both to the Indians interested and to the government. These Indians occupy three reservations, embracing a territory largely in excess of their actual wants, covered with a heavy growth of very valuable pine timber, which is deteriorating in value every year or being destroyed by forest fires. Large quantities have also been removed in years past by trespassers. There are probably 600,000,000 feet of merchantable pine timber on these reservations, which, under present circumstances, is of no value to the Indians. The bill under consideration is intended to authorize the consolidation of the In-

ations containing the best agricultural lands; ng of a certain number of acres to each indi- remainder of the lands with all the pine timber appraised value, and the funding of the pro- he tribe. In the opinion of this office, such ndians in a most favorable condition to insure he same time, secure for them a fund sufficient, ervention from the necessity of making further support.

y in future appropriations, and in order that ndians, I desire to call attention to the follow- d at the late extra session of Congress: House ef of the Menomonee Indians in the State of o. 356, providing for the sale of the New York

House bill No. 353, providing for the sale of lians in Kansas; and Senate bill No. 1124, for go Indians in Wisconsin.

A AND MALHEUR AGENCIES.

ans formerly at the Malheur Agency in Oregon Agent Wilbur at Yakama, Washington Terri- 1878, until January, 1879, most of them were prisoners of war, and were then removed, with Yakama Agency, at which place they arrived t.

they have received very careful training and spect. Indian civilization is carried on at the

Yakama Agency on business principles. The end and aim of the same are kept constantly in view. No time is lost in theorizing, and the Indian is made to earn his own subsistence and work out his civilization.

The 300 Indians now in the vicinity of the Malheur Agency and McDermott and Bidwell should also be sent to Yakama. The Malheur Agency should be abolished and the lands included in the reservation should be appraised and sold, and the proceeds of the sale invested for the benefit of the Indians.

RESERVATION TITLES.

Want of a title to their lands operates as a serious hinderance to the civilization of the Cheyennes and Arapahoes in the Indian Territory. They forfeited their treaty reservation by failing to settle thereon. They have been assured that the location now occupied by them is given in lieu of their treaty reserve. An act of Congress confirming this location would enable the agent to give them allotments in severalty, and would decidedly quicken their interest in farming. An Indian, like a European, is not inclined to cultivate land of which he has only an uncertain tenure.

Title to the locations now occupied by the Poncas and Joseph's bands of Nez Percés should also be confirmed to these tribes by act of Congress. There should also be an act passed to enable the Secretary of the Interior to settle the boundary to be definitely settled. These matters having been left undetermined from year to year, will, if not properly attended to, result in contention and perhaps war.

INVASION OF THE INDIAN TERRITORY.

In the early part of last winter an extensive scheme was organized to take forcible possession of certain lands in the Indian Territory which had been ceded to the government for Indian purposes. Letters were written and circulated in the States surrounding the Territory to parties interested in the project, declaring that these were public lands and were open to settlement by citizens of the United States. In a short time a large number of persons from Missouri, Kansas, and Texas were discovered in the act of entering the Territory, carrying household goods and farming implements, with the evident purpose of making permanent settlement.

This unlawful conspiracy was ascertained to be so extensive as to necessitate the adoption of speedy and vigorous measures, in order to prevent serious complications and trouble with the Indians. The attention of the President having been called to the matter by this department, on the 26th of April last, he issued a proclamation which was found on page 188, warning all persons who were intending or purporting to remove to the Indian Territory without permission of the proper authorities against attempting to settle upon any lands in said Territory, and notifying those who had already so offended, that they would be speedily removed therefrom by Indian agents, and that, if necessary, the aid and assistance of the military would be invoked to enforce the laws in relation to such intrusion.

Accordingly, upon the recommendation of the department, troops were posted at available points along the lines between the Indian Territory and Missouri, Kansas, and Texas, to prevent unauthorized parties from entering the Territory, and detachments and scouts were detailed to find and remove such intruders as could be found within its borders. By the diligent co-operation of the military authorities with the Indian Bureau, the intruders were speedily removed, and the unlawful invasion was checked.

protection and sanctions. It is true the various tribes have regulations and customs of their own, which, however, are founded on superstition and ignorance of the usages of civilized communities, and generally tend to perpetuate feuds and keep alive animosities. To supply their place it is the bounden duty of the government to provide laws suited to the dependent condition of the Indians. The most intelligent among them ask for the laws of the white man to enable them to show that Indians can understand and respect law; and the wonder is that such a code was not enacted years ago.

DEPREDACTIONS ON INDIAN TIMBER.

the United States relative to intrusion and depredation have proved ineffectual to prevent citizens of the United States from cutting and destroying timber standing thereon. Sections 5388 and 5389 of the United States Revised Statutes provide merely for the punishment of intruders from the Indian country, and for the imposition of a fine of \$1000 in the event of the return of any party after removal therefrom. The intruders, as a general rule, have no assets subject to execution, and as the penalty can only be collection of debt, the offenders escape without punishment.

It is insufficient, for the same reason, to prevent unlawful encroachments on lands belonging to Indians.

Section 5389 makes it a penal offense for any person to unlawfully cut or destroy timber standing upon the lands of the United States which in pursuance of law may be reserved for other purposes. This section and the act of March 3d, 1875, (p. 481), which is somewhat similar in its provisions,

were evidently adopted, the former for the single purpose of protecting timber on land which had been or might thereafter be purchased or reserved for the use of the military, or any other branch of the govern-

ment, the latter to prohibit the destruction of trees on land which had been purchased or reserved for public use. Neither the provisions of the former nor the act are sufficiently comprehensive (each of the rule of law which requires criminal statutes to be strictly construed) to extend to or include parties who have cut or destroyed timber on land within a large portion of the Indian reservations.

In a recent decision of the district court for the western district of Arkansas, at Little Rock, rendered thereon, decided that the lands within the Cherokee and Chickasaw Indian Territory were not lands of the United States within the meaning of the language used in section 5388, and that therefore the provisions of the act do not apply to the lands of the Chickasaws, Creeks, Seminoles, and certain other Indians.

The Indian reservations are now completely surrounded by a dense and adventurous white population, which, only by stringent laws is restrained from taking possession of Indian lands, and from destroying the little timber left thereon. I deem it, therefore, of great importance that such a law be enacted as will prevent the cutting or destroying of timber on the lands of the United States of reservations, viz: Lands to which the original Indian title has never been extinguished, but which have not been specially set apart by act of Congress, or otherwise for the use of the Indians for other purposes, although the Indians' right of occupancy is tacitly recognized by the government; lands excluded by treaty or act of Congress, or set apart for the use of the United States by Executive order of the President; lands allotted or reserved to individual Indians who are not under the laws of any State.

REPORT OF THE SECRETARY

The reports of the commission, with a statement of said lands, will be found on page 49.
I have the honor to be, sir, very respectfully,
Your obedient servant,

The Hon. SECRETARY OF THE INTERIOR

REPORT OF THE COMMISSIONER OFFICE.

DEPARTMENT
OF THE INTERIOR

SIR: I have the honor to report that I have surveyed during the fiscal year ending with the 30th of September, 1879, 1,039,214.26 acres of public lands, and 1,039,214.26 acres, making the total number of acres surveyed 1,814,788,922 acres. This shows an increase in the surveys of the previous fiscal year of 414,769 acres. At the beginning of operations to the 30th of September, 1878, the total area of the public land contained 1,814,788,922 acres.

The disposals of public lands during the fiscal year 1879, embrace an aggregate of 9,333,383.647.204.41 acres over the previous fiscal year, made up of the following particulars, viz:

Cash entries.....
Being a decrease of 254,981.18 acres as compared with the previous fiscal year. In the above total of 622,573.94 acres, amount, 165,996.53 acres, entered under the date of the 30th of September, 1877.

Homestead entries.....
Being an increase of 841,766.37 acres over the previous fiscal year.
Timber culture entries.....
Being an increase of 896,139.75 acres over the previous fiscal year.
Agricultural college scrip locations.....
Being an increase of 320 acres over the previous fiscal year.
Locations with military bounty land warrants issued between 1852 and 1855.....
Being a decrease of 33,900 acres as compared with the previous fiscal year.

State selections approved:

For school indemnity.....
For internal improvements.....
For agricultural colleges.....
For salt springs.....

Being a decrease of 28,600.80 acres as compared with the previous fiscal year.

Scrip locations:

With Sioux half-breed scrip.....
With Chippewa half-breed scrip.....
With Valentine scrip.....
With Porterfield scrip.....
With Cole scrip.....

Apportionment of appropriations.

For surveys in—	Timber lands.	Public lands.	Private claims.
Arizona		\$2,000	\$2,000
California	\$10,000	20,500	4,000
Colorado		23,400	1,000
Dakota		22,500	
Florida		6,000	
Idaho		12,000	
Louisiana		17,500	
Minnesota		15,000	
Montana		15,500	
Nebraska		22,500	
Nevada	5,000	12,000	
New Mexico		6,000	8,000
Oregon	7,500	18,000	
Utah		10,000	
Washington	7,500	18,000	
Wyoming		12,000	
	30,000	246,000	15,000
Amount apportioned for survey of—			
Timber lands exclusively			30,000
Amount apportioned for public surveys			246,000
Total amount for surveys			291,000
For examination of public surveys in the field			30,000
			321,000

In pursuance of the provisions of the act of June 20, 1878, as aforesaid, and the apportionment made of the money appropriated, a circular letter embracing instructions pertaining to the duties of the sixteen surveyors general for the fiscal year ending June 30, 1879, was issued on the 15th July, 1878, with certain modifications in their tenor according to the variant nature of the public service devolving on them, of which the following is a copy:

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE,
Washington, D. C., July 15, 1878.

United States Surveyor General:

SIR: The following instructions are issued for your guidance in having public surveys made during the present fiscal year:

You will let contracts only to deputies of known ability, who are practical and faithful surveyors, for the survey of such classes of lands as are mentioned in the appropriation act approved June 20, 1878, viz:

First. Those adapted to agriculture without artificial irrigation.

Second. Irrigable lands, or such as can be redeemed, and for which there is sufficient accessible water for the reclamation and cultivation of the same, not otherwise utilized or claimed.

Third. Timber lands bearing timber of commercial value, either foreign or domestic.

Fourth. Coal lands containing coal of commercial value.

Fifth. Exterior boundaries of town sites.

Sixth. Private land claims.

Settlements in valleys remote from the regular progress of public surveys, requiring the extension of the base and other standard lines in order to reach such localities and to have them surveyed, should receive at your hands proper attention, and should written application be made to you by bona fide settlers for the survey of such valleys for agricultural purposes, you will apply a proper share of the amount apportioned to your surveying district out of the \$300,000 appropriated for the survey of public lands and private land claims per act of June 20, 1878.

Such valleys as may be thus reached, and are found either actually settled on or

in order to administer oaths to deputy surveyors, your attention is invited to the fact that copies of contract and bond, copies of which will be sent you for immediate use, are now being prepared on a new form.

In order to guard against deficiencies arising from an excess of the estimated cost of surveys to be made, you should, for the present, leave a margin of the uncontracted for until you are satisfied from actual returns of all contracts that no excess of work shall have been incurred requiring the application of money therefor.

Section 19 of the Manual of Instructions, which is made part of the laws governing surveys, the objects, whose description, character, and position are shown upon the plats, are carefully itemized.

Attention is now paid to these very important particulars. You are, therefore, to require more exact compliance with such instructions, both in describing the objects therein enumerated.

It is of great importance that the transcripts of field notes, which are expected to be made, should be written in a clear, bold hand, so that every word and figure be legible and unmistakable as to its signification.

J. A. WILLIAMSON,

Commissioner.

The following operations have been prosecuted during the last fiscal year: The extent of the appropriations made for that purpose, embracing 781.64 acres of the public land and 1,039,214.26 acres of private claims, as shown by the following tabular statement:

States and Territories, severally considered, both of public lands and private claims, during the fiscal year ending June 30, 1879.

States and Territories.	ACRES.	
	Private claims.	Public lands.
Alabama	184,142.75	217,616.50
Arizona	229,814.53	1,292,116.07
Arkansas		1,009,758.63
California		1,167,092.26
Colorado		364,524.75
Connecticut		618,724.11
Delaware		778,764.20
District of Columbia		533,879.81
Florida	825,258.98	333,821.50
Georgia		622,251.09
Idaho		198,276.79
Illinois		685,665.44
Indiana		679,946.93
Iowa		3,343.41
Kansas		
Kentucky		
Louisiana		
Maine		
Maryland		
Massachusetts		
Michigan		
Minnesota		
Mississippi		
Missouri		
Montana		
Nebraska		
Nevada		
New Hampshire		
New Jersey		
New Mexico		
New York		
North Carolina		
North Dakota		
Ohio		
Oklahoma		
Oregon		
Pennsylvania		
Rhode Island		
South Carolina		
South Dakota		
Tennessee		
Texas		
Vermont		
Virginia		
Washington		
West Virginia		
Wisconsin		
Wyoming		
Total	1,039,214.26	8,445,761.68

The following details of the surveying operations during the fiscal year ending 1879, reference is made to the accompanying annual reports of the surveyors general, of which the following synopsis is submitted:

The apportionment to this district for surveys of public lands for the past fiscal year was \$6,000. Under it one contract was let for the San Francisco Mountains. The cost of the work was \$6,358.39, of which \$6,000 was paid, leaving a deficiency of \$358.39. Special deposits during the year for field work of survey of public lands amounted upon, \$949.99, which amount was expended.

An apportionment of \$2,000 for the survey of private land claims was made by any contracts entered into, and is now unavailable. The amount paid to surveyor general was \$2,750. There were also provided for clerks, \$3,000, which were expended, except a balance of \$0.36. The appropriation of \$1,500 for contingent expenses was also expended except \$33.10.

The sum of \$1,180 was deposited during the year for office work amount added to \$1,401.30 on hand at commencement of the year \$2,581.30 available, of which \$1,070 were paid out for office work were withdrawn by depositor, leaving \$1,470.94 unexpended.

One hundred and forty-five plats and diagrams of standard, town and section lines were prepared in the surveyor general's office, hundred of which were of mill-site and mining claims.

The number of miles surveyed in thirteen townships during the year was 751; area in acres, 217,616.46

The number of mill-sites and mining claims surveyed was 23 of same, 395.55 acres. Total lands surveyed in Arizona up to the end of the year, 4,707,214 acres.

The estimates for the surveying service for the year ending June 30, 1881, are as follows:

For survey of public lands, \$12,000; survey of private land claims, \$8,000; salaries of surveyor general and clerks, \$8,250; and incidental expenses, \$2,000.

Congress having made appropriation whereby the title to private land claims can be investigated and reported upon, the surveyor general has given public notice that on and after September 1, 1879, such claims will be duly attended to.

Attention is again called to the necessity of a survey of the San Carlos Mountain or San Carlos Reservation, so that its boundaries be definitely located and public and private interests subserved. In the absence of such survey, there is great danger of armed conflict between the settlers and Indians.

A change in the laws applying to the survey and sale of public lands is earnestly suggested. Township lines should be extended over all pasturage and mineral lands, the price per acre reduced, and the quantity purchasable from the government largely increased.

2. *California.*—The assignments to this district out of the appropriation for surveys of public lands during the year ending June 30, 1881, were \$29,500 for agricultural lands and \$10,000 for timber lands. Thirty contracts were made under said assignments, and the sum of \$31,979.22 was paid for work returned.

The sum of \$31,979.22 was received as moneys deposited by railroad companies for surveys of public lands, and by railroad companies on account of surveys, &c. Thirty-five contracts for surveys were made payable from the special deposits, three of which were canceled.

The area of public lands surveyed in the year is 1,910,530.92 acres; of miles run and marked, 6,808. The sum assigned for survey of land claims was \$1,000, of which \$3,091.28 were paid out under contracts. The area of private land claims surveyed was 178,546 acres.

The amount of special deposits for office work on survey of agricultural lands was \$8,402.86, of which the sum of \$5,394.83 was money received from railroad companies for office work on lands selected by the commission.

The sum of \$7,959.85 was deposited for office work on surveying claims.

One hundred and seventeen mining surveys were made. Salaries paid to surveyor general, \$2,750; to clerks in his office from regalar appropriation, \$10,998.86; to clerks out of appropriation of \$3,000 for making up arrears, \$2,998.99; and to clerks out of special deposits for work on public lands and mining surveys, \$14,642.09, leaving a balance of \$1,720.62 unexpended of special deposit fund.

The amount paid from the appropriation for incidental expenses was \$2,999.99.

For examinations in the field the sum of \$7,171.03 was paid, it being \$2,992 more than was assigned to that district.

The sum of \$1,974.23 was paid for expenses of suppressing depredations on the public timber.

The number of plats, maps, and diagrams made was 1,545; number of transcripts of field notes prepared, 204.

Sixty-seven descriptive notes of decrees of court in case of private land claims were prepared and transmitted.

The surveyor general recommends that all lands now unsurveyed should be sectionized without restriction as to character, and gives his reasons therefor at considerable length, for which see the report in full.

The completion of standard and meridian lines, as well as the township exteriors, is deemed imperatively necessary to avoid the serious errors resulting from the piece-meal system of projection of those lines now practiced. Subdivision of townships into sections may then be proceeded with as settlements demand and Congress makes appropriations.

Grazing and other lands being so intermingled, it is practically impossible to properly draw the line of demarkation under the present restrictions on classes of lands to be surveyed; consequently small tracts of valuable land must be left, causing surveys to be made in a fragmentary manner. The restrictions have not proved economical to the government, as the resurveys necessitated thereby more than offset the saving.

The provisions of section 2401 of the Revised Statutes, now applicable only to settlers under the pre-emption and homestead laws, should be extended to embrace the desert land act of March 3, 1877, and the act of June 3, 1878, providing for the sale of timber lands.

Very little of the timber land in the State has been surveyed, and as vast quantities of timber is used in the neighboring mines, the lands are consequently spoliated. The necessity of surveying these lands and permitting persons to make entries under the law is obvious.

Public attention is being directed toward the hitherto comparatively neglected belt of lands between the foot-hills and snow-line of the Sierra, where are thousands of acres sufficiently level for farming purposes.

The wine-growing interest of the southern portion of the State gives promise that California will soon rank with the foremost wine-producing countries of the world. From one and a half million vines in 1856, the number has increased to between forty and forty-five million. Exports during 1878 were 2,000,000 gallons, valued at \$1,300,000. During the first six months of the present year the exports reached 1,125,409 gallons of wine and 81,345 gallons of brandy, a gain of 260,000 gallons over the same time in 1878.

The examination of surveys in the field during the past year was very expensive, owing to being extended over work done in previous years as well as during the last fiscal year. Lack of appropriations for examinations of surveys in the field has led to looseness of work, while the moral effect upon deputy surveyors of an appropriation available to send a special agent at any time into the field for an examination of work will be readily perceived.

The surveyor general states that the policy of Congress in making such limited provision for the survey of the public lands in California has operated injuriously to the best interests of the State and small neighborhood communities.

Occupants of unsurveyed lands are unable to obtain title thereto. While the State has passed laws for the protection of these actual set-

Fifty-three townships were surveyed, embracing an area of 1,078,324.05 acres, at a cost of 2.3 cents per acre.

Two hundred and ninety-six mining claims were surveyed, embracing an area of 2,601 acres, the deposits for office expenses amounting to \$7,328.

The salaries paid the surveyor general and his clerks amounted to \$12,522.17, paid out of the regular appropriation and special deposits, leaving an unexpended balance of \$5,549.07.

The amount expended for rent of office, books, stationery, fuel, and other incidental expenses, was \$2,342.40, paid out of the regular appropriation and special deposit fund.

Individual deposits show an increase of about \$1,400 over the preceding year.

The office is in arrears five years in the preparation of descriptive lists for the local land offices.

The estimates submitted for the fiscal year ending June 30, 1881, are:

1. Salaries of surveyor general, clerks, and draughtsmen, \$10,800; 2. Incidentals, \$3,000; 3. Surveys, \$100,200.

The surveyor general reports that settlements continue in advance of surveys, and estimates the immigration to the State this season at 100,000 people, who have penetrated into every section thereof.

In addition to the carbonates found in the vicinity of Leadville, discoveries of vast bodies of minerals have been made, notably in the Elk Mountains, in Gunnison County, and near the Musquito Pass, in Lake County. Ruby silver has been found in paying quantities within the limits of the Ute Indian reservation.

The destruction of timber has been enormous, partially the result of accident, but often by the criminal carelessness of prospector and campers. All of the timbered lands should be surveyed, as a means of protection both to the government and the settler.

Railways have been extending their lines in every direction. The Denver and South Park Railway has been graded into the Arkansas Valley, and before "snow flies" will be running to Leadville.

4. *Dakota.*—The amount of the appropriation assigned for public surveys in Dakota during the year ending June 30, 1879, was \$30,500. Five contracts were made payable out of the assignment, and the amount of work paid for was \$23,207.43, leaving unexpended \$7,292.57.

The area of land surveyed in 47 townships during the year was 1,042,116 acres, which added to the area previously surveyed makes 19,780,876 acres surveyed in the Territory, exclusive of Indian and military reservations, town sites, and mining claims. The number of miles of base, township, and section lines run and marked in the year was 3,407; forty-six lode claims and nine placer mining claims were surveyed.

The sum of \$1,710 was deposited for office work on survey of mining claims. There was on hand July 1, 1878, an unexpended balance of \$910 from former years, making available the sum of \$2,620. Of this amount \$1,888 were expended, leaving \$732 to the credit of that fund.

For salaries, there was paid to the surveyor general and his clerks, \$6,500; and for incidental expenses, \$1,500; those amounts being appropriated for the objects mentioned.

Immigration has exceeded the largest estimates, and Dakota is believed to lead all other lands States and Territories in the number of acres settled upon during the year.

Unimproved agricultural lands, on the line of the Northern Pacific Railroad, sell as high as \$9 and \$10 per acre.

The wheat crop will average from 10 to 35 bushels per acre, notwith-

ling unfavorable conditions. Other crops are exceptionally good. The mineral and agricultural wealth of the Black Hills is being steadily developed.

The recent executive order restoring to market a large tract of land along the Missouri River will cause increased immigration to the lands. A wide strip through its entire length, bordering the river, should be immediately surveyed.

The competition of the Northern Pacific, Milwaukee and Saint Paul, Chicago and Northwestern, Southern Minnesota, Dakota Southern and Northern railroad lines, which are pressing forward to share in the prospective wealth of Dakota, bears testimony to its rapid growth and future prospects.

Public surveys should keep pace with this onward march, and preserve the interests of the general government and necessities of the territory.

The estimates for the year ending June 30, 1881, are as follows: For salaries, \$139,920; for salaries, \$12,000; and for incidental expenses, \$2,000.

Florida.—Four contracts for surveys were entered into during the year ending June 30, 1879, one being for the continuation of survey along the Georgia-Florida boundary line. One contract was completed by the Commissioner of the General Land Office. The amount for the year was \$6,000. Of the three contracts not closed at the last annual report, one still remains unfinished, it being for the survey of islands in Denler Lake in township 16 south, range 29 east. The islands on account of high water remain yet unsurveyed. Nine township plats were prepared and forwarded to the local office, all being of surveys of lots along the State boundary.

The surveyor general estimates as follows, for year ending June 30, 1881: For surveys, \$5,000; for salaries, \$6,200; incidentals, \$1,000; and for surveying service, \$12,200.

Idaho.—The surveyor general reports that the surveys in his territory for the past fiscal year were greatly impeded, and finally stopped by the late Indian war. Owing to this cause he was compelled to suspend the time of contracts. Although three contracts have been completed, the full amount of assignment of \$12,000 of appropriation, no work was returned by reason of high waters and the many disadvantages. He made a personal inspection of surveys in the field, of which a report was transmitted to the General Land Office July 12, 1879.

A decided interest in agricultural interests is reported, particularly in the eastern part of the Territory, on the line of the Utah Northern road. In the districts of Yankee Fork, Atlanta Banner, and Snake River, rich mines of gold and silver are worked to advantage, and the lack of cheap and cheaper transportation are only needed to largely increase mining interests. Placer mines along Snake River are being worked, and a new process for saving fine gold, with promising success.

The appropriation for the salaries of the surveyor general and assistants is deemed insufficient, and the exigency of the office demands an estimated appropriation for clerk hire so that a chief clerk and a nightman may be retained permanently.

The estimates for the survey of public lands are what the surveyor general considers actually necessary, and aggregate \$18,240. They include 180 miles of the third standard parallel north and 2,040 miles of section and subdivision lines. For salaries, \$7,000; incidentals, \$2,000; for thirty-six original maps and copies were transmitted to the General Land Office, and 10 descriptive lists to local land offices. Total amount

10 townships surveyed since last report, 172,687.91 acres; adding 376 townships, 6,231,722.25 acres of public lands, and 37 townships of Indian reservations, 464,907.28 acres, previously reported, make the total area surveyed to date of present report, 6,869,317.44 acres. Two sulphur mining claims in Oneida County were surveyed during the past fiscal year.

The amount paid for surveys under contracts made in the year ending June 30, 1878, and not hitherto reported, is \$5,660.61, leaving a balance of \$779.81 to revert to the Treasury.

The appropriation of \$5,000 for salaries of surveyor general and clerks during the past fiscal year was all expended except \$2.28.

The \$1,500 appropriated for incidental expenses were expended except forty-nine cents.

7. *Louisiana.*—Two contracts for surveys were made under the assignment of \$17,500 of appropriation for fiscal year ending June 30, 1879. Estimated liability, \$16,000; amount paid, \$15,628.22; not reported for payment, \$1,871.78; retained to meet excess of contracts, \$1,500; excess on contracts, \$5,861.66.

Work was confined to the pine timber region in the southwestern portion of the State, where 27 townships have been resurveyed. Large entries of timber lands are reported, that of one person exceeding 5,000 acres. The reports of deputy surveyors show a larger percentage of *bona fide* homestead entries than was anticipated.

Under the assignment of \$14,000 for the current fiscal year five contracts have been let for the continuation of resurveys in the southwestern district. Contracts are contemplated for the survey of two townships in the William Conway portion of the Houmas grant under the order of the Secretary of the Interior, dated June 21, 1879. The surveyor-general regrets that the whole of each subdivision of said grant cannot, under the present allotment, be surveyed, as hundreds of new settlers are desirous of locating upon these lands under the homestead and other laws. A large number of original settlers and their descendants, who now occupy lands and who have made extensive improvements thereon, should be protected, as these lands were originally entered under the pre-emption acts of 1830 and amendments. But little work has been done in issuing certificates of location under the act of June 2, 1853, and only 11 claims acted upon and certificates issued during the fiscal year. Total number issued to close of fiscal year, 432 out of 1,524 unsatisfied claims, leaving 1,092 to be adjusted.

Some progress has been made in bringing up the arrears of office work. Transcripts of fieldnotes for 24 townships have been made, leaving 760 townships yet to be transcribed. Thirty-two patent plats of 16 claims have been made. There are about 6,000 claims which cannot be patented until the plats are prepared and forwarded.

The surveyor general's estimates for surveys during the fiscal year 30, 1881, aggregate \$62,050, subdivided as follows: For resurveys in the southwestern district, 22 townships, em-
ber lands now being despoiled, \$17,400; for the resurvey in the southeastern district on the Mississippi River, above, as far as Donaldsonville, and for private land claims, original surveys in the southwestern district on the Gulf of old surveys of 1807 and 1830, \$14,000; for original southeast pass of the Mississippi River and Bayou Balize, in 1875 but not executed for lack of funds, \$1,800; to of Sabine River, connect township and section lines, land claims, and complete survey of townships 4 south,

ages 1 and 2 east, S. W. D., contracted for in 1875 but unfinished on account of deficient appropriations, \$6,000; for the survey of the Homesteads, embracing about 200,000 acres of sugar and rice lands, and for the survey of the lands surveyed by the Secretary of the Interior under his decision of July 4, 1878, \$15,000.

Estimates for salary of surveyor general and clerks, \$6,800; 14 clerks for arrears of office work, plats, and field notes, \$14,000; contingencies, \$2,000.

Minnesota.—All the contracts for surveys not closed at date of last annual report have been completed.

For the fiscal year ending June 30, 1879, four contracts for surveys were made out of the assignment of \$15,000. The work under the contracts has been returned, examined, and approved, and the sum of \$1,439.31 paid, leaving the sum of \$3,560.69 to be applied to the payment of work to be returned by Deputy Hamilton, consisting of surveys adjacent to the Red Lake Indian reservation, the estimated cost of which will cover the balance of the assignment.

Number of acres surveyed since last report, 364,516.75, which, added to 39,689,123.08 acres previously surveyed, makes a total of 40,053,639.83 acres surveyed to date. Fifty-seven plats were made of 19 townships surveyed. Descriptive lists of all surveys were furnished to the land office, and transcripts of field notes to the General Land Office.

Owing to the small appropriation for clerk hire, but little was done for arrears of office work. Record transcripts of 41 townships have been prepared and bound. A large amount of miscellaneous office work has been performed.

One contract was entered into in May, 1879, payable out of the appropriation for the year ending June 30, 1880, for the survey of lands adjacent to Pigeon River Indian Reservation. The appropriation of \$7,000 for salaries of surveyor general and clerks was all expended except \$1,000.

Of the appropriation of \$1,500 for incidental expenses there has been expended \$1,160.58; balance remaining, \$339.42.

The sums estimated for the surveying service for the year ending June 30, 1881, are as follows: For surveys, \$49,900; for salaries, \$10,500; for incidentals, \$1,500.

The estimates for surveys for said year contemplate the extension of the meridian and correction lines north of the present surveyed portion of the State, west to the 3d guide meridian, and the townships contiguous to Rainy Lake and Rainy Lake River; also pine lands on stream flowing north into said lake and river. This region, heretofore inaccessible for want of communication, is now being opened up through the Canadian Pacific Railroad, which, together with steamboat navigation from Portage to Fort Saint Francis, near Rainy Lake, forms a route of ready access to markets, and has greatly enhanced the demand for lands on the Canadian side, and the lands on this side being more desirable would soon be settled if they were surveyed. Frequent inquiries are now made concerning these lands. Large tracts of pine and hardwood timber lands are in that vicinity, upon which depredations are constantly being made by border settlers on either side of the line, and a great waste is caused by fires.

A modification of the law for the disposal of timber lands is recommended, so that the lands should be appraised immediately after survey and then sold for cash at valuation, which would prove valuable to the government, and save great expense in the detection and prosecution of trespassers.

Montana.—Under the apportionment of \$15,500 for surveys in

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Territory during the year ending June 30, 1879, five cent and the work has been done and accounts have been rendered amount of \$15,662.80, being an excess of \$162.80 over appropriation. Surveys were made in 33 townships of 524,312 acres of agricultural, coal, and timber lands; also of 70 lode and placer claims, an area of 1,668 acres. Of the appropriation of \$5,750 for surveyor general and clerks, only 83 cents remain unexpended. A thousand five hundred dollars were paid for contingent expenses, total cost of surveys, \$15,662.80; for inspection of same, \$1,249.13; expenses, including salaries, \$7,249.13; cost of field work, \$1,249.13; cost of inspection, two mills per acre; cost of office work, one cent and four mills; total cost per acre to government, three cents and six mills. Much of the land surveyed was in the Yellowstone River. The exterior boundaries of 15 townships of coal lands and other minerals were surveyed. The number of acres surveyed was 4,194. The total expense of the surveying service was \$16,911.93. Net cash receipts for entry and sale of lands in Montana during the year.

The sum of \$2,000 was deposited during the year for surveys of mines. Of this amount, \$1,690.49 were paid for balance of \$309.51, which, applied to the deficiency of \$1,000 from former years, reduced the deficiency to \$544.42, it being on special-deposit account. There were deposited for survey site, \$125; for office work, \$25. Four hundred and sixty diagrams were prepared. Of these, 288 were of mineral lands, and hundred and eighty-nine letters were written. Surveys were platted, and transcripts of the field notes were prepared in descriptive lists for the local offices.

The surveyor general's estimates for the surveying service are as follows: For surveys, \$45,800; for preliminary examination of the country, \$3,000; salaries, \$9,300; contingent expenses, \$1,000. He states emphatically that his estimates only cover the necessary expenses. A higher rate per mile for surveys is necessary, as the surveyor met with no losses and delays, principally by the fact that he could survey at the present rates allowed; but in view of the losses, and delays, he should have \$12 for standard, \$10 for section lines, and \$8 for section lines. Meander lines should be paid for at standard, in timbered lands. Base lines should be run through the reservations for the sake of uniformity in surveys. Extension lines should be run over the whole country, and topographical information be obtained in running the same. Pastoral lands should be subdivided. Pastoral lands should also be sold at reduced rates, in large bodies, to stock raisers and farmers. Deputy surveyors should make four classes of lands: first, agricultural lands, needing no irrigation; second rate, agricultural lands, needing irrigation; third, pastoral lands; fourth, worthless lands. Personal inspection of surveys in the field has proved quite beneficial. The export of gold and silver, including bullion and coins, during the year.

10. *Nebraska*.—The original assignment for surveys in the year ending June 30, 1879, was \$22,500, out of which \$21,517.97 were made, and the work has been completed and returned \$21,517.97, leaving a balance of \$982.03, which, with \$2,500 assigned, is applicable to pay for work under a third assignment, which is not returned. Number of miles run in the year 3,256. Thirty-four townships subdivided, having an area

res. Field notes of these surveys have been examined, approved, transcripts furnished to the General Land Office; also descriptive plats to the local land offices, and plats to the General Land Office. The appropriation for salaries of surveyor general and clerks for the year ending June 30, 1879, was \$5,000, and was all expended, except \$1,000. The balance of special deposit for office work by Union Pacific Railroad Company and Burlington and Missouri River Railroad Company on hand June 30, 1878, amounting to \$9,799.35, still remains undistributed.

The appropriation of \$1,500 for incidentals was all paid out. There remains unexpended a balance of \$282.98 of deposits for field work by railroad companies left from former years.

Immigration has been very large during the year, and of an excellent class. Abundant crops have been yielded, and the extension of railroads has increased the means of transportation. The railroad companies have made great inducements to settlers to take their lands.

The surveyor general recommends, as an economical measure, an appropriation for the fiscal year ending June 30, 1881, sufficient to complete the public surveys in Nebraska. He estimates \$115,000 as a maximum amount. Estimates for the surveying service for the fiscal year ending June 30, 1881, aggregate \$48,594, and are for surveys in the same northern and western portions of the State, embracing agricultural and grazing lands which are well watered and of superior quality, much under cultivation in the southern and eastern sections.

There is a large and increasing demand for lands in the northwestern portion of the State, which will be increased by the early construction of a railroad through that section to the Black Hills.

Estimates for salaries and office expenses are as follows: For surveyor general, \$2,000; clerical force, \$6,300; rent, messenger, and incidentals, \$3,000; total, \$11,300.

Under the apportionments of appropriation for the year ending June 30, 1879, \$17,500, contracts for surveys amounting to \$15,500 have been made, leaving a balance uncontracted for of \$2,000.

11. *Nevada.*—For the year ending June 30, 1879, the sum of \$2,500 was paid for salary of surveyor general and \$2,998.62 for clerk hire out of the regular appropriation. The sum of \$1,558.34 was paid out of special deposits by the Central Pacific Railroad Company for surveys, and \$35.64 were paid out of the deposits by same company for office work.

Out of the appropriation for public surveys for the year ending June 30, 1879, the sum of \$10,352.93 was paid for work performed under contracts. Out of the appropriation for the year ending June 30, 1879, there were paid \$9,856.46. The number of acres surveyed during the year was 923,334.90, of which 28,719.87 acres were mineral lands, and the balance were agricultural and grazing lands. The number of miles surveyed was nineteen hundred. There were also surveyed ninety mineral claims, with an area of 1,091.85 acres, and one town site in Nevada, containing 227 acres.

The sum of \$2,955 was deposited for office work on mineral claims. Six hundred and ninety plats were made, of which four hundred and three were of mineral claims. The mineral productions for the past year have materially decreased, especially in and around the Comstock, owing to the "Bonanzas" and other mines awaiting the completion of the Sutro tunnel. The mining districts of Bodie and Lake, in California, near the State line, have not only attracted many miners, but also of capital. The Sutro tunnel drain having been completed, various mines have recommenced operations. The agricultural out-

is cheerful, and the crops an average, notwithstanding the drought, &c., of the past two seasons.

The surveyor general desires an increase in the appropriation for contingent expenses from \$1,500 to \$2,500, so as to supply the office with needed stationery, books, &c., and he also asks an appropriation to liquidate deficiencies for office expenses now outstanding. The estimates for the surveying service in Nevada for the year ending June 30, 1881, are as follows: For surveys, \$23,500; for salaries, \$8,000; for incidentals, \$2,700.

12. *New Mexico.*—The surveyor general, under date of August 27, 1879, states that the public surveys made under the appropriation for the year ending June 30, 1878, not hitherto reported, amount to 220 miles run and marked at a cost of \$2,298.91; also twenty-seven private land claims surveyed out of the apportionment for year ending June 30, 1878, being incomplete at date of last annual report. The area of these claims is 4,536,750.05 acres; the number of miles run in surveying them was 1,400, at a cost of \$23,571.82.

Of the assignment of \$15,600 for survey of public lands during the year ending June 30, 1878, the sum of \$15,026.47 was expended; balance reverting, \$573.53. Amount of individual deposits, \$3,150; expended, \$2,946.24; refunded to depositors, \$203.76. Of the assignment of \$33,500 for the survey of private land claims, \$32,880.36 were expended; balance reverting, \$619.64. There were deposited for office work on public surveys for that year \$415, of which \$327.49 were paid out, and the remainder was refunded to the depositors.

For the year ending June 30, 1879, the amount apportioned for surveys of public lands was \$6,000, and for survey of private land claims \$8,000. The public surveys under the apportionment show 1,775 miles run and marked, the cost of which was not ascertained at the close of the fiscal year, owing to the late return of the work. Surveys were made in 28 townships, payable out of special deposits by settlers to the amount of \$6,155. Of this amount \$5,995.98 were paid out, leaving a balance of \$159.02. The sum of \$620 was deposited for office work, of which \$600.50 were paid out, leaving \$19.50 undrawn. The number of miles surveyed under special deposits was 969. The area of public lands surveyed during the year was 375,519.21, which added to 7,862,276.94, the amount previously surveyed, makes a total of 8,237,796.15 acres surveyed up to June 30, 1879. Three contracts for the survey of private land claims were made. Fifteen claims were surveyed, only part of which have been examined and platted. Nine mineral and mill site claims were surveyed. Deposits for office work were made in five cases only, amounting to \$200. Of this amount \$29.64 are reported as refundable to depositors.

Of the \$8,500 appropriated for salaries of surveyor general and his clerks, all was expended except 27 cents.

The appropriation of \$1,500 for contingent expenses, increased by receipts from subrent of office building to the extent of \$240, was expended, except \$1.20. The current work of the office has been pretty well kept

up. The clerical force of the office is asked for in order to keep up the office work of several years' standing. Request is made to buy a safe for the deposit of valuable archives; \$61.97 to pay for services of a messenger from June 30, 1878. The reimbursement to deputy surveyors of expenses incurred by them in platting and transcribing their work out of the office is recommended, the government having received the benefit of the work.

The estimate for the surveying service in New Mexico for the year

REPORT OF THE SECRETARY OF THE INTERIOR

Mountains, and Indian hostilities and heavy storms in 1879. For these reasons several contracts have been extended and some yet unfinished.

The assignment of \$1,800 for survey of agricultural lands is mostly used in response to requests of settlers for the survey of settled upon and as far as possible, in unsurveyed districts necessitated small contracts.

The assignment of \$7,500 for survey of timber lands has been used to survey tracts skirting the upper slopes of the Cascade Mountains, the brakes and spurs of the Blue Mountains, tracts in the Blue Mountains depredated upon.

The amended deposit law of March 3, 1879, facilitates the entry of land by settlers. Recommendation is made that the law be so amended so that certificates should be received in payment for as much land as subject to cash entry.

In view of the increase of mining interests a corps of miners has been appointed.

The surveyor general recommends that the instructions to the deputies to come to the office of surveyor general to execute contracts, and to bring their sureties with them to have the contract by him, be modified, so that the contract can be executed by the county officer where the surveyor general is not present.

14. *Utah.*—The area of public land surveyed during the year 1879, is 416,132.37 acres, of which 71,101.26 acres are mineral and 3,641.32 acres as coal lands. Total area surveyed in 1879, in Utah, 8,594,952.34 acres. Surveys of agricultural lands during the year under contracts not closed at date of last annual report amounted to 1,186 miles.

The assignment of appropriation for the year was \$10,000. Two contracts were made, and the work returned under the first and under contracts not closed at date of last annual report to \$20,605.76. The number of miles run and marked in surveys was 2,044.

The appropriation of \$1,500 for incidental expenses was expended except a balance of \$126.16 unexpended.

For salaries there were paid to the surveyor general \$2,996.45 out of the appropriation; balance of \$3.55 unexpended.

The surveying contracts under the appropriation were for the survey of standard parallels and guide meridians, to explore regions known, and to allow surveys to be made for increasing the area of Lands along the fifth standard parallel south, west of Grandditch to a great extent of coal lands, and being without value for the present. Lands along the Colorado River are of an agricultural and grazing character, with extensive value of great value. Contracts have been made for the subdivision of the lands.

The surveys on account of individual deposits consist of a resurvey of the Spanish Fork Indian Reservation, smaller surveys, amounting to 138 miles, at a cost of \$8,000 and a balance of \$2,027.02 deposited for surveys of public lands liable to pay for work now under contract.

The mining interest has revived very considerably. In the Blue and Blue Ledge districts new discoveries have been made equal the famous "Ontario." In the West Mountain

belt" has been discovered, about two miles in width, running east and west. There is great excitement and contest for claims.

The extension south of the Utah Southern Railroad will soon open the San Francisco mining district, making accessible extensive silver beds and iron regions, and bringing nearer to market the silver of the Harrisburg mining district.

The increased number of mineral surveys has augmented the difficulties of surveying, owing to conflicting claims and errors of former surveys. One great difficulty is the inaccuracy of the relative locations of mineral monuments. An appropriation for the purpose of confirming and establishing mineral monuments heretofore solicited is again made as an absolute necessity.

There were 35 mining districts at the close of the fiscal year, and the number is constantly increasing.

One hundred and nineteen mineral surveys were made during the year.

The following office work in connection with mining surveys was executed during the year: Maps, 390; connected mineral district maps, 10; Office work under appropriation: Maps of Utah Territory and Salt Lake City; 334 plats; transcripts of field notes, 131; descriptive lists, 16; Work under special deposits: Plats, 27; transcripts of field notes, 16; descriptive lists, 16.

Estimates for the surveying service during the year ending June 30, 1881, are as follows: For surveys, \$15,000; connecting mineral monuments, \$5,000; salaries of surveyor general and clerks, \$8,000; janitor, and incidentals, \$2,500; preparation of maps and field notes, 35 mining districts, showing the relative position of each claim, \$1,000.

The area of public lands disposed of during the fiscal year is as follows: Original and final homestead entries, 84,749 acres; cash, 13,025 acres; timber culture, 2,179 acres; desert land, first and second entries, 13,025 acres; mineral land, 728 acres; Supreme Court scrip, 400 acres.

15. *Washington.*—The surveyor general reports the completion of three contracts for surveys unfinished at date of last annual report. The amount paid for work done on the same was \$4,757.48; miles run and marked, 769; acres surveyed, 229,192.17; plats made, 43; balance of appropriation for the year ending June 30, 1878, unexpended, \$354.35.

For the year ending June 30, 1879, the apportionment or appropriation for surveys was \$18,000 for agricultural lands and \$7,500 for mineral lands exclusively. Twelve contracts were made under these appropriations, four of which have been completed. The amount paid for work done is \$13,786.34; balance applicable to unfinished contracts, \$11,713.66; number of miles run, 1,988; area surveyed during the year, 894,326.98, including the area of 229,192.17 acres surveyed under appropriations and that surveyed under special deposits.

The amount of special deposits during the year was \$866 for work on public surveys and \$125 for office work. Under two contracts payable from special deposits there were paid out \$471.45, leaving an excess of \$394.55 over cost of survey.

The appropriation of \$6,500 for salaries of surveyor general and clerks was all expended. There was on hand at the beginning of the year \$62.88 on account of special deposits for office work, which, with deposited during the year, made \$187.88 available for payment of hire. Of this sum there was paid but \$75, leaving unexpended \$112.88 of special deposits. The appropriation of \$1,500 for incidental expenses was all expended. The estimates for the surveying service for the

ending June 30, 1881, are as follows: For surveys, \$92,172; for salaries, \$10,500; for incidentals, \$2,000.

The annual map forwarded shows the progress of surveys and the boundaries of the recent Indian reservation for "Chief Moses" and his people.

The growth and prosperity of the Territory during the past year has fully realized expectations. While the lumber interest has been somewhat depressed, owing to stagnation in California markets, all other industries have been active. Grain growing in Eastern Washington has increased 33 per cent.

The surveyor general reports no desert land in the Territory within the meaning of the desert lands act. The yield of wheat on sage brush lands, without irrigation, averages from 40 to 60 bushels per acre.

The immediate necessity is shown of defining the eastern and southern boundaries of the Yakama Indian Reservation, as adjoining lands are in demand by white settlers.

16. *Wyoming*.—Three contracts were let from the apportionment of \$12,000 for public surveys during the year ending June 30, 1879. Two of these contracts were completed, and one partly finished, at a cost of \$9,841.06. Two contracts were let from special deposits. The amount paid for work on these contracts was \$1,080.54. Three contracts were let from the apportionment for the year ending June 30, 1880.

The amount paid for public surveys during the year was \$24,909.43, of which the sum of \$14,347.83 was paid out of the appropriation of March 3, 1877.

ded balance of deposit for surveys by the Union Pacific pany is remaining, of \$290.47.

ownships were subdivided in the year; area of same, as, which added to 7,926,173.37 acres previously surveyed of 8,844,084.27 acres surveyed in the Territory, in 422

, for the year amounted to 2,397 miles, and included the 1 north boundaries of Fort Laramie Reservation, exteriors and subdivisions of 41 townships.

1,151 acres. coal lands reported is 4,495 acres; area of auriferous lands, Three gold mining claims were surveyed. The improve- valued at \$39,500. The survey of another

r consisted of 41 township plats for the Gen- me number for the local office, also 82 de- office, and 9 plats of mineral claims and 3 rinal maps of these surveys were constructed lee, and transcripts of the field notes were and Office. Whole number of maps and s lists, 82; transcripts of notes, 44. Other is done, and the clerks worked nearly double

r general a salary of \$2,750. The appropria- ' clerks was all expended except 28 cents. lers on account of special deposit fund

hat fund during the year was \$190; amount \$521.98, thus leaving a balance of \$338.90

\$1,500 for incidental expenses, of which

sponse to charges or complaints filed by residents, to institute special examinations, testing the fidelity of adherence by sworn deputies to the letter of their obligations.

By order of the honorable Secretary of the Interior, the sum of \$30,000 was set apart from the appropriation for surveys for the fiscal year ending June 30, 1879, to be applied, if necessary, in defraying expenses of such examinations. The sum actually expended for service of this kind during the year amounted to \$14,367.96, resulting in 36 special examinations in States and Territories, as follows: Alabama (coal lands), 5; California (public lands and private claims), 22; Dakota (agricultural and mineral lands), 2; Illinois and Idaho (public lands), 1 each; Louisiana (private claims), 2; Montana (public lands), 2; Utah (public lands), 1. Of the foregoing, 9 related to surveys of private claims, 21 to agricultural and 6 to mineral lands. As a result of these examinations, four cases now await final action upon the question of approval or rejection. In the remaining cases the surveys have, in accordance with favorable reports of the examiners, met with approval.

Complaints or charges, where the ability or integrity of a deputy is involved, are subject to careful examination before they are accepted as authorizing an examination of his work. When made in malice or at the suggestion of opposing interests, without proper foundation, they cause unnecessary delay in adjustment and payment of accounts, resulting in serious vexation and loss of time and money upon the part of a public servant who may be totally undeserving of such treatment.

The tendency of existing low rates of compensation for surveys, especially those of timbered lands, is to discourage applications for contracts by many reliable and experienced surveyors, and to pave the way for the employment of deputies of less experience and integrity. To this is added the disadvantage that surveyors are usually not allowed to commence work upon their contracts at any date prior to the commencement of the fiscal year credited with the appropriation from which they are paid. This requirement results injuriously, especially in northern latitudes, causing a loss of from one-third to two-fifths of each surveying season, while the cost of equipment for the field is about the same as for a full term. In the face of these facts, surveying contracts are freely taken, and for reasons best known to deputies operating in certain localities, they would in all probability be as freely taken under a still further reduction of rates, while the difficulty in obtaining satisfaction would be correspondingly enhanced.

It may be entertained on the question of advancing the law for surveys, it appears that special examinations do not afford a sufficient safeguard against imperfect and fraudulent surveys, and, in assurance that the worst cases may not be overlooked, under the existing laws and regulations, the only remedy seems to lie in the prompt examination or inspection in the field of every survey of public lands that may be executed hereafter. To be satisfactory, such examination should be made at the time of the completion of the survey, or in any given contract or soon after. In cases where the contract is completed simultaneously with the close of the surveying season, inspection as now performed would necessarily be deferred until the following year, and payment upon such contracts would be correspondingly delayed. To obviate this difficulty, such a provision affecting original surveys should be enforced as would make the work of inspection simply to an examination of the manner in which the marks or monuments of the surveys have been established.

ts to vacate the order approving the survey consideration of this motion, action, relating controversy, was stayed. A cross-motion by y was entertained, and a surveyor connected ted with instructions—

resence of such of the parties as shall elect to attend otherwise, a careful, accurate, and complete survey, cts in relation to the matter in controversy, &c.

the parties in interest, the special examina- 20, 1879, and concluded in July following. volved the retracement of two separate public forty years ago, which closed upon an Indian ablished in 1816, which latter crossed the lake The area of the surface in controversy was all lines of these old surveys, necessary to the posts as originally established, were carefully and in obedience to instructions, a careful e lake was made, showing the condition of corresponding to legal subdivisions of forty ined the present and mean depths of water the aforesaid subdivisions. The work also ydrographic reconnaissance relating to the the aforementioned channel connecting the nd of the river and of a portion of Lake Michi- nity of Calumet harbor.

field work the special examiner submitted a p and field notes in detail. These papers are ng a time when the facts therein set forth can

Cherokee lands in North Carolina.

nee to my annual report for 1877 (p. 70), sur- 875 for the purpose of identifying, marking, oundaries and the numerous subdivisions of by the Eastern Band of Cherokee Indians. t 2,000, of which about 1,500 are "full-blood" der of the Cherokee Nation who chose to re- preference to removing west of the Missis- date at which the main body, as provided for nd 1835, emigrated to the country near that hem. The Eastern Band have since the date . in the same general locality, and by them- arties have been dealing in lands by descrip- bscure in their nature as to require tedious board of arbitrators to determine many im- to their possessory rights.

f the board of arbitrators it was agreed that should be final and a rule of court, and to ts approval by the judge of the United States of the Interior, the Commissioner of Indian nt of Justice. The action of the board, bear- having been thus approved, and the execu- Indians in accordance with the requirements accomplished, it became necessary, in order isputed possession of the lands therein desig-

nated, to define upon the face of the country and upon official diagrams and records the general boundaries and the subdivision lines of the awarded lands, the value of which has been estimated at some \$2,000,000.

As stated in the above-mentioned annual report, this work of survey and identification was undertaken by Maj. S. Temple, under his contract of March 30, 1875, and prosecuted until the appropriations therefor came exhausted. The result of his labors were, 1st, the survey of the principal tract belonging to the Indians and known as the Qualla boundary, containing some 73,000 acres, and lying in the northeast part of Jackson and the southeast part of Swain Counties; 2d, the survey of the line of Jackson and Swain, so far as it related to the Qualla boundary; 3d, the retracement of the five township lines within the Qualla boundary; 4th, the establishment and permanent marking of the bounding the small subdivisions of the Qualla tract occupied by individual members of the band, and of such lots as have been set apart for public use. It was also found necessary to retrace the boundary of a tract known as the Cathcart survey, which lies within and now forms a part of the Qualla boundary. In addition to the above, the lines of a number of tracts scattered through the counties of Cherokee, Graham, and Macon were run and marked, and to complete this work in a manner that their respective locations could be delineated upon maps and diagrams accompanying the returns, it was necessary to run a base line starting from a known point on the Tennessee River and extending through the country in which the detached lots or tracts were situated in order that they might be connected therewith. The base line ran through a broken and mountainous country, and it was necessarily very tortuous in its alignment. The linear extent of the surveys under this contract amounted to 815.07 miles, resulting in the survey and marking of 148 tracts, aggregating 9,934 acres, in the Qualla tract and lying within the limits of Swain County, and 332 tracts, amounting to 32,900 acres, in the same general tract, but lying in Jackson County. Elsewhere there were separate tracts, aggregating 8,318 acres, were surveyed and marked. These were distributed as follows: 20 tracts in Cherokee, 28 in Graham, and 4 in Macon Counties. Voluminous field notes with separate diagrams of each lot in addition to the connected maps, were submitted to this office by the surveyor upon the completion of his unusual and arduous and perplexing labors, which, upon critical examination, were approved and became a part of the permanent records of the office.

Congress, by act March 3, 1877, appropriated a further sum of \$200,000 to provide for the completion of the surveys, and, as may be seen by reference to my last annual report, a second contract with this object in view was made in April, 1878, with Mr. Temple. The instructions accompanying this contract appear in the report last referred to. The field work under this contract was completed June 27, 1878. The returns embrace field notes and separate diagrams of 65 lots or groups of lots. Diagrams accompany the same, showing all the lands surveyed within the counties of Graham and Cherokee, the tortuous base line run by the surveyor during this and the previous survey, and the lines connecting the individual lots and groups of lots with the base. Of the 65 lots surveyed under this contract, 33, having an aggregate area of 6,913 acres, lie in the county of Cherokee, and 32, embracing 5,115 acres, are in Graham. A diagram also accompanied the returns showing a survey by consent of all interested parties, by which the southern portion of the Qualla boundary or tract was enlarged to the extent of 400 acres independent of some additional land claimed by individual Indians which was included in the said enlargement. The aggregate quantity

of land added to the Indian possessions by the survey of 1878 amounts to 12,658 acres. To accomplish this, it was necessary to run and mark 131.48 miles of tract boundaries, 14.94 miles of base line, 27.73 miles of connecting lines, and 1.6 miles of closing lines in the aforesaid enlargement of the Qualla tract—in all 175.75 miles. Of the surveyed tracts or lots shown in the returns of the surveyor, 28 are regarded as being lots called for or named in the award of the arbitrators; 16 lots so named, to which there seemed to be evidences of Indian title, remain unsurveyed, in consequence of service of notice upon the surveyor by whites owning or in possession of them forbidding survey of the same. Four of the above-named 28 lots are also claimed by whites, but notices forbidding survey were not served in time to prevent it. Owing to an observance of different systems of numbering and designating the tracts by the several parties through whom title has passed since their conveyance by the State of North Carolina, the work of identification of awarded lands has been a labor of exceeding difficulty.

The work accomplished under both of the contracts herein described amounts to 991 miles of surveys, determining and marking the lines of 63,588 acres of tribal and individual Indian lands.

Resurvey of the Cattaraugus Indian Reservation.

The Cattaraugus like the Allegany Indian Reservation is chiefly occupied and controlled by the Seneca Nation of Indians. Lying for the most part in Erie, its southern portion extends into Chautauqua and Cattaraugus Counties, in the State of New York. Its lines, with the exception of the eastern boundary, were surveyed and marked in the year 1798 by Augustus Porter. Many landmarks of the original survey have disappeared, and difficulties growing out of encroachments upon the lands of the Indians made a resurvey of the reservation a necessity. Congress, at the request of the Indians, authorized, by act of May 25, 1878, a resurvey of this tract, requiring—

The exterior boundaries thereof to be marked by stone or iron monuments, the expenses thereof not to exceed the sum of two thousand dollars, and to be paid by the Seneca Nation of Indians, who are authorized to select a surveyor, to be approved by the Secretary of the Interior.

The Seneca Nation having, by resolution of their council, designated Charles E. Fink as a suitable person to prosecute the resurvey, the choice was approved by the honorable Secretary, and a contract to that effect was entered into on July 6, 1878. Special instructions accompanied the contract, requiring and minutely describing various operations tending to the restoration and permanent marking of the lines and corners and faithful delineation of all important topographical features and improvements of the land. In order to facilitate future efforts to restore the boundary lines in case of loss, their precise angles of divergence were required to be taken by means independent of the magnetic meridian. The resurvey was commenced without unnecessary delay, resulting in the completion of the field work on the 26th of September, 1878. By careful observation the magnetic declination at the date and place of the resurvey was found to be $3^{\circ} 20'$ W. Posts in mounds, numbered consecutively from the initial point of the survey and the resurvey, mark each mile of the boundary, and these are witnessed by pits, and wherever practicable by reference trees. The corners of the reservation are marked by hollow, octagonal, cast-iron posts, 4 feet long and of 5 inches diameter, with caps, and base flanges of 6 inches diameter. The posts are set to a depth of $2\frac{1}{2}$ feet below the natural surface of the

round, and their remaining parts are protected by conical mounds having 5 feet diameter of base. Their positions are further witnessed by pits and trees, as in the case of the mile posts. The sum of the boundary lines of the reservation is 30 miles 49½ chains, and the included area is 27,007 acres. Cattaraugus Creek, which flows through the entire length of the reservation, a distance of about 18 miles, has been meandered along both of its banks. In addition to the highways and other public improvements, the location of every dwelling is shown upon the maps returned by the surveyors, with name and symbol. Complete returns of the resurvey embracing the maps and field notes in triplicate were submitted to this office by the surveyors on November 30, 1878, which, upon examination, were approved. Copies were furnished, as required by law, to the clerk of Erie County and to the Seneca Nation.

The lands of the reservation are represented as being generally of the best quality. The improved portions aggregate about 18,000 acres, the remainder bearing timber of first and second growth. The quantity of waste land is small. The Indians are chiefly engaged in agriculture and pursuits, many of them having large and well stocked farms upon which they have erected good and substantial dwellings. Annual fairs are held by the agricultural society of the nation. The inhabitants are of an descent number as follows: Senecas, 1,435; Cayugas, 145; Onondagas, 40. The reservation is divided into ten school districts, which have been organized and provided for in the usual manner. The Terrell Asylum for orphan and destitute Indian children of the State of New York, erected at a cost of some \$20,000, is located on this reservation and is in part sustained by contributions of the Indians of the reservation. Religious societies have been formed, and the Presbyterian, Methodist and Baptist denominations have edifices in which services are held with regularity. An industrial school has also been established. Questions which grew out of encroachments upon the lands of the Indians have been settled by general acquiescence in the results of the survey. A considerable portion of the reservation is occupied by white settlers who claim possession under title from the Ogden Land Company. The areas of the sections in dispute are shown in dotted lines upon the map and referred to in the field notes.

Old Cherokee Indian Reservation.

This tract of land, formerly occupied by the Cherokee Nation, is situated in the central part of the State of Arkansas, and lies on the north side of the Arkansas River, in townships 7 and 8 north, range 2 west. Its boundary lines had been clearly defined while the Indians were in possession, and the lines of the public land surveys were closed there since the departure of the Cherokees, there have been repeated assertions upon the part of settlers, and in their behalf, for subdivision of the lands, in order that the lands might be disposed of, but pending the decision of the courts, until the passage of act of Congress of June 20, 1878, there has been no appropriation applicable to the survey of public lands in Arkansas.

This office has long looked upon the area embraced within the reservation as an unincumbered portion of the public domain, but in view of the fact that the treaty by which the lands of the reservation were ceded back to the United States contained certain stipulations, it was thought best to address a letter of inquiry to the Commissioner of Indian Affairs concerning the right of the United States to survey and dispose of the

lands in accordance with existing laws and regulations. This letter dated June 1, 1877, referred to the treaty of 1828, by which the Cherokees ceded to the United States all the lands to which they are entitled in the State of Arkansas, and to a further provision of that treaty, that the property and improvements connected with the agency should be sold and the proceeds applied to aid in erecting in the country to which the Cherokees were about to remove a saw and grist mill for their use. The letter also called attention to the supplemental treaty of 1833, in which it was stipulated that eight patent railway corn mills were to be erected in lieu of the above mentioned grist and saw mills. Article 1 of the treaty of 1866 was also referred to, in which a provision occurs "that any lands owned by the Cherokees in the State of Arkansas and in States east of the Mississippi may be sold by the Cherokee Nation in such manner as their national council may prescribe," &c.

It appears that under this last-mentioned provision the Indians claim the right to dispose of the lands of the Old Cherokee Reservation. The letter of this office also invited attention to a report on this subject, made in 1866 by the Commissioner of Indian Affairs to the honorable Secretary of the Interior, and to our letters bearing date June 19, 1868, and May 25, 1869.

In response to the above communication, a letter was received from the honorable Secretary of the Interior bearing date June 27, 1877 transmitting a report of the Acting Commissioner of Indian Affairs bearing date February 18, 1878, from which it is learned that the Indian authorities, in reply to his letter of inquiry addressed to them, concerning the basis of any claim they might have against the United States asserted that the corn mills provided for in the treaty of 1833 had not been erected, and that consequently the government had failed to fulfil its obligation in that regard, while on the other hand the records of the government show strict compliance with that as well as other stipulations of the treaty. The Commissioner further says:

It seems clearly evident to this office that the Cherokee Indians, in the most plain, comprehensive, and emphatic terms, ceded to the United States all their lands in Arkansas—the intention and fact both concurring—and that the government has fulfilled its reciprocal obligations growing out of such cession, and so cleared its title acquired thereby from any possible doubt as to its validity. But even if the government were in default in the full performance of its part of said agreement, such failure would not impair the validity of the cession. It could only, at most, give a claim for money compensation for non-fulfilled treaty obligations.

The Commissioner, referring to the above quoted eighteenth article of the treaty of 1866, shows that the Indians, having previously ceded their lands in Arkansas, it cannot be made to sustain any claim to the reservation lands in question. This position is strengthened by quotation from article 31 of the same treaty, as follows:

All provisions of treaties heretofore ratified and in force, and not inconsistent with the provisions of this treaty, are hereby reaffirmed and declared to be in full force and nothing herein shall be construed as an acknowledgment by the United States or as a relinquishment by the Cherokee Nation, of any claims or demands under the guarantees of former treaties, except as herein expressly provided.

In transmitting the above communication, the letter of the honorable Secretary of the Interior concludes with the following remarks:

It will be seen from the report of the Commissioner of Indian Affairs, a copy of which is herewith inclosed for your information, that all the stipulations made with the Cherokees, upon the performance of which their right to the land in question was extinguished, have been fully complied with on the part of the United States. The history of the case is full and complete, and the treaties and acts of Congress bearing upon the matter at issue are cited in support of the right of the government to dispose

the lands. I concur in the opinion of the Commissioner of Indian Affairs, and the subject is referred for the action of the General Land Office.

Subsequent to the receipt of the foregoing communications, in accordance with the views therein expressed, and with opinions entertained by this office, the lands have been treated as unincumbered property of the United States. Accordingly a contract was entered into September 1, 1878, payable out of the appropriation of June 20 of the same year, with James Potts, for the subdivision of the tract in question. The work has been completed in accordance with the contract and special instructions. The returns of the surveyor show the area of the reservation to be 3,343.41 acres, upon which there are now some 30 settlements, covering about 600 acres. Some of the lands have been occupied for a period of sixteen years. The settlers desire permission to preempt the lands occupied by them, subject to the ordinary regulations. The surveyor also reports the finding of landmarks of a subdivision of the reservation reported to have been made by authorities of the so called "Confederate Government."

Survey and subdivision of Red Cloud and Spotted Tail Reserves in Dakota

Act of Congress, May 27, 1878, appropriated \$10,000 for the survey of such portions of the Sioux Indian Reservation in Dakota as may be required for agricultural purposes.

Act of June 20, 1878, authorized the honorable Secretary of the Interior to appoint a commission, consisting of three persons, to visit the Red Cloud and Spotted Tail Indians, to confer with them relative to their present location, with a view to their final settlement, where they can earn their support by agriculture and stock raising.

Act of March 3, 1879, appropriated \$10,000 for the survey of lands for allotment to the Red Cloud and Spotted Tail bands of Sioux Indians in Dakota Territory.

Basing action upon the aforementioned authority, a commission appointed by the honorable Secretary visited Dakota, charged with the duties described in the act of June 20, 1878, and made report recommending the survey and subdivision of an area of country, bounded on the north and west by White Earth River, on the south by the boundary of Dakota, and embracing on the east the South Fork of the White Earth River and tributary streams.

Treaty stipulations with the different tribes of Sioux provide for allotment of lands to any individual belonging to said tribes of Indians who may desire to engage in agricultural pursuits, said lands to be situated in any country which may be occupied by the said Indians. It has also provided that each head of a family might select not exceeding 320 acres of land, and each person over eighteen years of age, not being the head of a family, not exceeding 80 acres. The number of individuals belonging to the bands of Red Cloud and Spotted Tail has been estimated by the Commissioner of Indian Affairs at 3,000, requiring an area of subdivided lands equal to 24 townships.

In agreement with a suggestion of the Commissioner last named, the honorable Secretary directed that the lands intended for agricultural purposes be subdivided into tracts of 40 acres. It was also directed that a contract should be entered into with Daniel G. Major, for the accomplishment of said survey and subdivision. In accordance with the foregoing, a contract was executed and special instructions relating to the details of the work were issued under date November 7, 1878. In anticipation of early application for allotments of agricultural lands, the

structions were so framed in conformity with the laws governing the survey of the public lands as to allow the largest portion of the limited appropriation then available, to be applied to the prosecution of the subdivisional surveys. The surveyor was required, while extending the guides, meridian, and standards parallel, to determine, by observation, localities best adapted to agricultural operations, and to establish thereon the intermediate corners from which to set off the smaller legal subdivisions.

The initial point of the survey is the intersection of the fourth guide meridian with the south boundary of Dakota, which is the northeast corner of fractional township 35 north, range 33 west, of the public land surveys of Nebraska.

Under the instructions, township lines which would embrace land unsuitable for subdivision and allotment, in manner aforesaid, were not allowed to be run. It was also required that the usual practice in the disposal of excess or deficiency attending the closings of subdivisional surveys of the public lands should be adhered to, but that in all other cases the corners should be equidistant. The same regulations apply to the marking of corners for sixteenths of sections on the township lines as have been herein described relative to the superior lines.

In marking corners upon all the lines, stones and pits were to be preferred to stakes or posts, and it was required that all stakes should be charred and surrounded by mounds and other evidences, in manner prescribed in the manual and supplement thereto. The surveyor was supplied with numerous diagrams illustrating the legal methods of projecting the various lines.

The areas of lands embraced within the limits of the two reservations suitable for subdivision and allotment can only be ascertained from the returns of the surveyor. As a consequence, the cost of a complete survey cannot as yet be accurately determined. The present estimates are as follows: 234 miles of standards parallel, at \$10, \$2,340; 106 miles of guides meridian, at \$10, \$1,060; 288 miles of township-lines, at \$7, \$2,016; and 4,320 miles of subdivisional lines, at \$6, \$25,920. Total estimated cost of the survey, \$31,336.

Under the second appropriation of \$10,000 mentioned herein, a subsequent contract bearing date May 13, 1879, was entered into with M. J. Major providing for further prosecution of the work under guidance of instructions previously issued. The surveys under these contracts have been in progress during the whole of the surveying season just closed.

Survey of the Colorado and Utah boundary.

On June 20, 1878, the sum of \$15,000 was appropriated, and the establishment of monuments upon, the line between the State of Colorado and the Territory of Utah was intrusted to Rollin J. Reeves, esq., surveyor and an act was entered into and full instructions relative thereto were issued to the surveyor under date July 26, 1878. The line consists of that portion of the thirty-second degree meridian between the thirty-seventh and forty-first parallels. The initial point of the survey is at the intersection of the fourth guide meridian with the thirty-seventh parallel, a point common to the States of New Mexico and Arizona. The monument is a granite pillar, which rises abruptly from the valley of the Rio Grande, 31.66 chains south of the south or left bank of the river, established in 1875 by Chandler Robbins, esq., in the

No rates of surveys having been fixed in the appropriation for the next fiscal year, the Commissioner is authorized to establish rates.

When surveys in California cannot be made at the rates fixed by the Commissioner, the surveyor general will, before making any report to the Commissioner the character of the lands as ascertained by a thorough examination, the kind and character of difficulties to be overcome, and the reasons why such surveys should be made, for the Commissioner's consideration.

No survey should be made except at the minimum rates, unless for the most urgent reasons.—(Secretary Schurz's letter, June 16, 1879.)

Survey of fractional townships 20, 21, 22, 23, 24, 25 north, 1 east, Mount Diablo meridian, California.—The law fixes the location of deficiencies which occur in any township to be on the west or north sides thereof, and when, therefore, in establishing standard and township exterior lines, townships are found but five miles in length, the law requires that the lines must be so located and marked that the deficiency will fall on the west part of the township, and sections 18, 19, 30, and 31 will be omitted, instead of the eastern tier of sections 1, 12, 13, 24, 25, and 36.

The law requires that section lines shall be surveyed from north and from east to west, and it is a violation thereof to reverse the order of procedure.

A deputy surveyor should not obey the instructions issued by the surveyor general if they are in violation of the law and regulations.—(Secretary Schurz's decision, April 14, 1879.)

Time of filing township plats in district land offices.—The practice of forwarding the triplicate plat to the district land office before the triplicate plat has been received at the General Land Office, and the same of same communicated to the surveyor general, ordered discontinued, and hereafter the triplicate plat will be forwarded to the local office after notice to the surveyor general of the approval of the survey. The object of the order is to prevent complications of title, &c., which arise from entries of lands and subsequent cancellation of surveys.—(Order of Commissioner General Land Office, April 17, 1879.)

Advances of funds to surveyors general.—The Secretary of the Interior decided on February 20, 1879, that advances of funds be made to surveyors general on their requisition to enable them to pay the expenses of their offices monthly, instead of the quarterly payments practiced of late years by report from the General Land Office. It was therefore made to carry into effect this practice, which prevailed in former years, but had been discontinued for several years. The new mode of manner of payment went into effect July 1, 1879.

Circular in relation to assignment of certificates of deposit on advances for surveys.

By the act of Congress approved March 3, 1879, section 2402 of the Revised Statutes of the United States was so amended as to allow the assignment of certificates of deposit by indorsement, such certificates to be received in payment for public lands entered under the pre-emption and homestead laws by settlers, and not otherwise.

The following circular instructions to surveyors general and receivers were issued under the law:

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., June 27, 1879.

To Surveyors General, Registers, and Receivers:

GENTLEMEN: The act of Congress approved March 3, 1879, entitled "An act to amend section twenty-four hundred and three of the Revised Statutes of the United States in relation to deposits for surveys," necessitates some modifications in the previous instructions from this office on the subject.

The provisions of law governing such deposits are as follows:

"When the settlers in any township, not mineral, or reserved by government, desire a survey made of the same, under the authority of the surveyor general, and file an application therefor in writing, and deposit in a proper United States depository, to the credit of the United States, a sum sufficient to pay for such survey, together with all expenses incident thereto, without cost or claim for indemnity on the United States, it may be lawful for the surveyor general, under such instructions as may be given him by the Commissioner of the General Land Office, and in accordance with law, to survey such township and make return thereof to the general and proper local land office, provided the township so proposed to be surveyed is within the range of the regular program of the public surveys embraced by existing standard lines or bases for the township and subdivisional surveys."—(Sec. 2401, U. S. Rev. Stats.)

"The deposit of money in a proper United States depository, under the provisions of the preceding section, shall be deemed an appropriation of the sums so deposited for the objects contemplated by that section, and the Secretary of the Treasury is authorized to cause the sums so deposited to be placed to the credit of the proper appropriations for the surveying service; but any excesses over and above the actual cost of the surveys, comprising all expenses incident thereto, for which they were severally deposited, shall be repaid to the depositors respectively."—(Sec. 2402, U. S.)

"Where settlers make deposits in accordance with the provisions of section twenty-four hundred and one, the amount so deposited shall go in part payment for their lands situated in the townships the surveying of which is paid for out of such deposits; or the certificates issued for such deposits may be assigned by indorsement, and be received in payment for any public lands of the United States entered by settlers under the pre-emption and homestead laws of the United States and not otherwise."—(Sec. 2403, Rev. Stats., as amended by act of March 3, 1879.)

The following regulations are prescribed to carry into effect the above provisions of law:

1. When one or more settlers on public lands shall apply to the surveyor general of the district within which such lands are situated for the survey of a particular township at his or their expense, that officer shall furnish to said applicant or applicants two separate estimates, one being the cost of the subdivisional survey of the surveyable portion of the entire township, and the other to cover the expense of platting the survey.

2. Settlers availing themselves of the provisions of section 2401, Revised Statutes, shall deposit with a United States designated depository, to the credit of the United States Treasurer, on account of surveying the public lands and clerk hire in the surveyor general's office, in the district in which their claims are situated, the sums estimated as aforesaid, as the cost of the field and office work.

3. The surveyor general will take precaution to estimate adequate sums, thereby preventing any deficiency in the payment of deputy surveyor, as well as for clerk hire involved in the service.

4. Where several settlers desire the survey of the same township, the necessary deposits to cover all expenses of the survey and platting may be so subdivided as to be proportionate to the amount of lands within the township claimed by each settler; this, however, is a matter to be regulated by parties applying for such surveys; but all applicants should be informed that the law makes no provision for the refunding of any excess of the deposit over the value of the lands taken. The excess, however, if any, over and above the actual cost of the survey in the field and office work, will be refunded as heretofore. When from any cause the certificate of deposit is not used, no provision of law exists for the repayment of any portion of the amount deposited, except as stated in paragraph 10.

5. No certificate of deposit can be received in payment by the receiver for more than the cost of the land at government price, and when the certificate is for more than that amount the receiver will indorse the amount for which it is received, and will charge the United States with that sum only, not as cash, but in the manner prescribed in the last paragraph of these instructions, and not with the sum named on the face of the certificate.

6. Under section 2403, as amended, certificates of deposit for surveys issued before or subsequent to March 3, 1879, may be assigned; such assignments must be acknowledged before the register or receiver, or some person duly commissioned to acknowledge legal instruments.

28 field note diagrams forming the index volume; 3. 14 railroad volumes; 4. The tracing of the annual map of the United States, two-thirds of which has been completed.

DISPOSALS OF PUBLIC LANDS.

During the fiscal year ending June 30, 1879, the disposals of public lands amounted as above stated, to 9,333,383.29 acres. In this aggregate is included the sum of 622,513.96 acres of cash sales, this sum covering 165,996.53 acres of desert lands entered under the act of March 3, 1877, in addition to the area embraced in ordinary private sales for cash, under section 2354 of the Revised Statutes of the United States; in pre-emption entries paid for in money, under section 2259 Revised Statutes; in commutations of homestead entries to cash, under section 2301 Revised Statutes; and in various other classes of disposals for money under special laws, as of lands in certain abandoned military and Indian reservations. These figures show a falling off of 254,981.18 acres as compared with the previous fiscal year.

Pre-emptions.

In addition to cash sales and locations with military bounty land warrants, with agricultural college scrip, and with private land claim scrip, allowed pursuant to sections 2257 to 2287 Revised Statutes, and act of January 28, 1879, which contain provisions for the disposal of public lands to actual settlers to whom is given the preference right to purchase, on certain conditions, the tracts covered by their respective settlements, the pre-emptive principle is embodied in other enactments under which certain classes of public lands are held subject to entry, such as town sites under sections 2380 to 2394, and act of March 3, 1877. In reference to cases arising under the several laws referred to, the following is a statement of the work performed by the Pre-emption Division, G, during the year ending June 30, 1879:

Contested cases in the division undecided July 1, 1878.....	468
Contested cases in the division decided July 1, 1878.....	485
Total in division July 1, 1878.....	953
Received during year ending June 30, 1879.....	1,790
Total.....	2,773
Decided during the year.....	1,112
Closed during the year.....	1,122
Referred to other divisions.....	21
Total disposed of.....	1,143
In the division June 30, 1879, decided and undecided.....	1,630
Of these, 485 are decided and 1,145 are undecided.	
Ex parte entries in the division July 1, 1878, not acted on.....	2,050
Ex parte entries in the division July 1, 1878, suspended.....	1,082
Total in division July 1, 1878.....	3,132
Received during the year.....	4,254
Total.....	7,386
Approved during the year.....	3,726
Referred to other divisions.....	223
Total disposed of during the year.....	3,949
Total in the division July 30, 1879.....	3,437

Of these, 2,314 have not been acted on and 1,123 are suspended for various reasons.
During the year ending June 30, 1879, 5,240 letters have been received; 3,000 remain unanswered.

Number of letters written by the division.....
Number of pages recorded by the division.....
Number of pages copied by the division.....

The condition of the work in the division is about the same as one year ago. (Annual report 1878, page 28.) While the clerks assigned to this division have generally performed their duties well, and have worked diligently to accomplish a different result, the figures show a slight decrease in the amount of arrearages.

This office has already recommended the consolidation of the pre-emption and pre-emption laws. In addition to the cogent reasons which have heretofore been submitted in favor of the consolidation, it seems pertinent here to advert to the fact that claims originating under the respective laws are convertible, at the option of the parties. Under the original homestead law of May 20, 1862, and as now embodied in section 2289 of the Revised Statutes, a pre-emption settler had the right of transmuting his claim to a homestead entry, and under the act of March 27, 1878, he is entitled to the credit on his homestead entry of the time embraced in his pre-emption settlement. So, also, under the provisions of section 2301 of the Revised Statutes, the homestead settler is allowed at any time prior to the expiration of five years to convert his homestead entry to a cash entry, and obtain patent therefor from the government as in other cases directed by law, upon making proof of settlement and cultivation as required in the pre-emption law. It may also be stated that by the generous legislation of Congress in the year 1872 the time for the proofs and payments of pre-emption settlers has already been extended until large numbers of them have made proof on their claims, or held legal possession of them, for a period much longer than is allowed under the homestead law. This is the case in all that region of the public domain injured by grants of pre-emption, and when the extent of that injury is taken into consideration, the number of parties claiming to be sufferers by reason thereof, and the magnitude of the immense aggregation of that class of pre-emption settlers, it is reasonable to suppose that hundreds and thousands of the settlers have made valuable improvements on their lands, and under the decisions of the Supreme Court in the case of *Atherton vs. Fowler* and *Hosmer vs. Wallace*, it is somewhat a matter of speculation what will be the issue of their claims as respects the time of the adjustment of the claims and the portion of the land which may be finally awarded to them.

It is therefore suggested, in view of these serious complications, that in order to simplify the process of acquiring homes on the public lands, that the legislation which has been so repeatedly asked for by the people should receive the careful consideration of Congress.

I deem it proper to refer more particularly in this place to the decisions of the United States Supreme Court in the cases of *Atherton vs. Fowler* (6 Otto, 513), and *Hosmer vs. Wallace* (7 Otto, 575), concerning the pre-emption laws. As contained in the Revised Statutes, the laws, among other things, provide as follows:

SEC. 2257. All lands belonging to the United States, to which the Indian title has been or may hereafter be extinguished, shall be subject to the right of pre-emption under the conditions, restrictions, and stipulations provided by law.

SEC. 2259. Every person, being the head of a family, or widow, or single person over the age of twenty-one years, and a citizen of the United States, or having declared intention to become such, as required by the naturalization laws, has made, or hereafter makes, a settlement in person on the public lands

pre-emption, and who inhabits and improves the same, and who has erected or shall erect a dwelling thereon, is authorized to enter with the register of the land-office for the district in which such land lies, by legal subdivisions, any number of acres not exceeding one hundred and sixty, or a quarter section of land, to include the residence of such claimant, upon paying to the United States the minimum price of such land.

SEC. 2260. The following classes of persons, unless otherwise specially provided for by law, shall not acquire any right of pre-emption under the provisions of the preceding sections, to wit:

First. No person who is the proprietor of three hundred and twenty acres of land in any State or Territory.

Second. No person who quits or abandons his residence on his own land to reside on the public land in the same State or Territory.

SEC. 2264. When any person settles or improves a tract of land subject at the time of settlement to private entry, and intends to purchase the same under the preceding provisions of this chapter, he shall, within thirty days after the date of such settlement, file with the register of the proper district a written statement, describing the land settled upon, and declaring his intention to claim the same under the pre-emption laws; and he shall, moreover, within twelve months after the date of such settlement, make the proof, affidavit, and payment hereinbefore required. If he fails to file such written statement, or to make such affidavit, proof, and payment within the several periods named above, the tract of land so settled and improved shall be subject to the entry of any other purchaser.

SEC. 2265. Every claimant under the pre-emption law for land not yet proclaimed for sale is required to make known his claim in writing to the register of the proper land-office within three months from the time of the settlement, giving the description of the tract and the time of settlement; otherwise his claim shall be forfeited and the tract awarded to the next settler, in the order of time, on the same tract of land, who has given such notice and otherwise complied with the conditions of the law.

SEC. 2266. In regard to the settlements which are authorized upon unsurveyed land the pre-emption claimant shall be in all cases required to file his declaratory statement within three months from the date of the receipt at the district land-office of the approved plat of the township embracing such pre-emption settlement.

SEC. 2267. All claimants of pre-emption rights, under the two preceding sections, shall, when no shorter time is prescribed by law, make the proper proof and payment for the land claimed within thirty months after the date prescribed therein, respectively, for filing their declaratory notices, has expired.

SEC. 2273. When two or more persons settle on the same tract of land, the right of pre-emption shall be in him who made the first settlement, provided such person conforms to the other provision of the law; and all questions as to the right of pre-emption arising between different settlers shall be determined by the register and receiver of the district within which the land is situated; and appeals from the decision of district officers, in cases of contest for the right of pre-emption, shall be made to the Commissioner of the General Land Office, whose decision shall be final, unless appeal therefrom be taken to the Secretary of the Interior.

Thus we have defined in explicit terms the lands which shall be subject to pre-emption, the personal qualifications required in a pre-emptor and what shall constitute a disqualification, as well as the several requirements of the law to entitle a party to exercise the right with reference to the classes of offered and unoffered lands respectively, and the penalty attached to a non-compliance therewith; also the method of adjustment in case of conflicting pre-emption claims, and the original and appellate jurisdiction of the officers connected with the Department of the Interior charged with the adjudication of pre-emption cases.

In reference to the class of lands which, having been offered at public sale according to law, are subject to sale at ordinary private entry, the penalty prescribed by section 2264, above quoted, in case the settler fails to file or to prove up and pay for the land in time, is that the tract shall be subject to the entry of any other purchaser. This penalty has been enforced by the rulings of the department, and in this respect its rulings harmonize with the Supreme Court decisions referred to, as there is nothing in those decisions which holds that land subject to sale at private entry may not be purchased by any one desiring to do so, although

be occupied and improved by another party, unless that party has a legal right of pre-emption.

In reference, however, to the class of lands which have not been surveyed, and which therefore are not subject to private entry, as prescribed by section 2265, above quoted, in case the settler complies with the legal requirements as therein given, is that the land shall be forfeited and the tract awarded to the next settler in the order of time on the same tract who has given such notice and otherwise complied with the conditions of the law." The decisions of the Supreme Court which have been mentioned are to the effect that no other person can do anything to acquire a pre-emption right as long as the settler occupies and improves the land; and therefore the tract shall be awarded to the next settler in the order of time, as provided for in the law. In the first settler chooses to occupy it with improvements thereon. In the Atherton-Fowler case the court held that "The right to make improvement was to be exercised on unsettled land; to make improvement on unimproved land. To erect a dwelling-house did not mean to erect another man's dwelling. It had reference to vacant land; to improved land." And again, in the Hosmer-Wallace case, the court held that no act pertaining to the inception of pre-emption right could be done on land when it is occupied and used by others."

The principle laid down by the court in these decisions seems to be a right of occupancy of the public lands as against parties who may enjoy the benefits of the pre-emption laws in the way pointed out herein, without restriction as to the person occupying or the amount of land occupied. A person although not possessing the qualifications prescribed by the pre-emption laws—a minor or a foreigner—one who may have already exhausted his pre-emption right, who is already the proprietor of several acres of land, who may have large possessions already acquired, who may have public domain by settlement or otherwise—may occupy the public lands to an extent only limited by his desire or means of making the improvement, and there is no power to restrain or oust him, nor the power of the Executive to bring the land into market under the law, nor the legislative power to make some other disposal of the land. The present policy of the government is adverse to bringing the lands into market to be disposed of in large quantities to parties who would buy for speculative purposes. It contemplates rather that the land should be held by the government for gradual disposal as they are required for small farms by actual settlers. In providing a means for achieving this object, the pre-emption, homestead, and timber-culture laws have been enacted. As the decisions of the Supreme Court reveal, it is now that the unoffered public lands may be taken up and held by parties not seeking to acquire title under these laws, that in the opinion of those who do, I respectfully recommend that action be taken to bring the matter before Congress for legislation, with a view to regulating this right of occupancy in such manner as may be deemed expedient. It will perhaps be conceded that the meritorious settler already occupying public land, with valuable improvements thereon, should not be deprived of his home and improvements in favor of a new settler who may have acquired some technical advantage over him in the law, and that in such case the prior settler should be allowed the right to enter; but it is clear to my mind that this right should be made the subject of positive legislation, establishing and determining the proper limits of its enjoyment.

I desire also again to urge the recommendation contained in

annual report (page 29), that section 2262 of the Revised Statutes be so amended as to allow the pre-emption settler to make his personal affidavit before any officer residing in the vicinity of the land authorized to administer oaths, and whose official character is duly authenticated by the use of a seal or certificate.

It will be seen, therefore, that under existing statutes any qualified person can enter 160 acres of any of the vacant unappropriated public lands subject to homestead entry in the United States, with the above exceptions in Alabama and Mississippi, and further, that any *bona fide* settler who had been restricted to 80 acres of land in limits of railroad or military road land grants, being double minimum land, may enter a sufficient quantity additional to make up 160 acres; but there is no provision of law which relieves those homestead settlers who during the operation of the two year restricting clause in the act of June 21 1866, made homestead entries of 80 acres *outside* of railroad limits of minimum land.

In view of the injustice of such discrimination, and for the sake of uniformity, I would respectfully recommend that the provisions of the acts of March 3 and July 1, 1879, be extended in such a manner as to allow those parties who made entries outside of railroad limits and who were restricted to 80 acres to enter additional land to make up the 160 acres; and also that the provisions of said acts be extended to Alabama and Mississippi.

The following is presented as a comparative statement of the disposal of public lands for cash and under the homestead and timber culture acts, and locations of agricultural college scrip, for the fiscal years ending June 30, 1875, June 30, 1876, June 30, 1877, June 30, 1878, and June 30, 1879, respectively:

	Cash.	Homestead and timber culture.	Agricultu- ral college scrip.	Total.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
1875.....	745,081.30	2,820,927.84	9,432.02	3,575,421.1
1876.....	640,691.87	3,487,804.84	2,320.00	4,128,908.5
1877.....	740,680.57	2,698,771.56	1,280.00	3,440,738.1
1878.....	877,555.14	6,368,779.10	640.00	7,166,974.2
1879.....	632,573.96	8,030,685.22	900.00	8,650,219.1

Reference is made to the following decisions affecting homestead rights rendered since the date of the last annual report of this office:

1. The homestead entry of a party who, although he acted in good faith, failed to establish permanent and exclusive residence on the tract until three and one-half years after date of entry, should be held in abeyance until five years from the date of permanent settlement, and his case submitted to the board of equitable adjudication.—(Acting Commissioner's letter to register and receiver at Eau Claire, Wis., of September 3, 1878, case of Thorson Olsen.)

2. Where a deceased homestead claimant left a widow from whom he had been separated by written articles of agreement, it was decided that such widow was the proper party to make final proof, notwithstanding the fact that the deceased claimant willed all his estate, both real and personal, to his brother.—(Commissioner's letter to register and receiver at Salina, Kansas, of October 2, 1878, case of John Rhoades.)

qualified under the law must be treated as having no effect in legal rights when he becomes qualified to make an entry.—(Secretary's decision, case of Charles Root vs. Donald Smith, May 1, 1879.)

Timber culture.

During the last fiscal year entries of public lands have been made under the laws for the promotion of timber culture to the extent of 1,766,573.93 acres, which is an increase of 896,139.75 acres over the previous fiscal year. No patents have yet been issued for timber culture entries, nor can any be issued prior to March 13, 1882, as the period for which the cultivation of the timber must be kept up as a prerequisite to the issue of a patent will not expire in any case prior to said date. Except, perhaps, in some case of a party claiming, as heir or legatee of a deceased party, the patent for forty acres, under the act of March 13, 1874.

Timber culture rulings have been made during the fiscal year as follows:

1. A party having instituted a contest to cancel a timber culture entry for non-compliance with the requirements of the act of March 13, 1873, failed to tender his application to enter the land in question on the day of instituting the contest, for the reason that the register told him that *that was not* the proper time to file application, but, as it was understood, the same should be filed at time of trial of contest. Where a claimant shows to the satisfaction of the land department that he was purposely misled by the local officer, such claimant should not be prejudiced on that account.—(Secretary's letter to register, September 17, 1878, case of Wilson vs. Morrison and Danford.)

2. In case a timber culture entry is abandoned, the land covered by such entry is immediately subject to entry by another party under the timber culture or homestead laws, but the party applying must give the prescribed notice and the adverse party be allowed a hearing as in contested cases.—(Commissioner's letter to register and receiver, St. Paul, Minn., November 1, 1878.)

3. A party made a timber culture entry of a tract of land, and, after a few years, under a misunderstanding as to its location, and afterwards found that the tract he had entered was unfit for timber culture. He therefore asked to be allowed to change his entry so as to embrace an entirely different tract. *Held*, that it was incumbent upon the party to ascertain definitely the location, as well as the character of the tract before he entered it, and failing to do this he cannot be allowed to change or relinquish his entry simply because of his negligence. *Because* the land does not prove to be what he expected.—(Secretary's letter of February 12, 1879, in case of Cornelius Mace.)

4. Where a party made a timber culture entry under the acts of March 13, 1873, and March 13, 1874 (prior to the enactment of the act of June 14, 1878), it was held that the entry might be consummated under the act of June 14, 1878, by showing, when making final proof, that he was growing upon his claim (of 160 acres) 6,750 thrifty trees upon more than 10 acres, the last named act being construed as requiring a certain amount rather than the number of acres of timber.—(Commissioner's letter to O. D. English, Sioux Falls, Dak., February 14, 1879.)

5. Where a party failed to break the requisite number of acres, and a contest was instituted, it was held that a strict compliance with the law must be shown, and that the contestant, in making an applica-

contest, and at the same time to enter the land in question, must be regarded as an *adverse claimant* whose appearance in the case precludes the sending of it to the Board of Equitable Adjudication for confirmation, even where a substantial compliance with the law may be shown.—(Commissioner's letter of March 4, 1879, to R. & R. Beatrice, Nebraska; *Gemmer vs. Chandler*. Affirmed by Secretary September 29, 1879).

6. The act of Congress approved June 14, 1878, permits persons who made timber culture entries under the provisions of the act of March 3, 1873, and March 13, 1874, to complete the same on compliance with requirements of its terms.—(Secretary's letter of March 17, 1879, case of *Holland vs. Martin*.)

7. In a number of cases where parties applied to make timber culture entries of land located in sections containing trees of various kinds, the applications were rejected upon the ground that there was sufficient timber in the several sections in which the tracts in question were situated to characterize them as timber lands. From this decision the parties appealed, and, upon consideration of the appeal it was held that the word "timber," as used in the act of June 14, 1878, is defined to mean that sort of "wood which is proper for buildings, or for tools, utensils, furniture, carriages, fences, ships, and the like," and that probably the true intention of the act was that the section of land in which an entry was made for the cultivation of timber should be naturally devoid of *timber* trees, such as pine, oak, ash, maple, elm, walnut, hickory, and other timber trees.—(Secretary's letter of September 12, 1879, case of *Nicholas Noel et al.*)

8. The following instructions to registers and receivers were embodied in a circular issued by this office August 21, 1878, viz: Do not allow a timber culture entry except you have satisfactory proof that the section embracing the land claimed is "prairie lands, or land naturally devoid of timber." Never allow a second timber culture entry in a section where there is already an uncanceled timber culture entry of a quarter of the same section. Remember that a party who contests a timber culture entry gains no preference right to enter the land unless he shall, at date of instituting the contest, file with you a written application to enter the tract upon cancellation of the contested entry. Remember that the affidavit required in making a timber culture entry must be acknowledged within the bounds of your land district. Return to the parties all such affidavits acknowledged outside of your district. The honorable Secretary of the Interior, under date of the 26th June, 1878, decided that a person could not change his timber culture entry to a homestead entry.

Desert land entries.

of this class of lands under the desert land act of March ; the fiscal year ending June 30, 1879, reach the number ing an aggregate area of 165,996.53 acres, being a de- th the number of entries and aggregate area, as compared scal year, of nearly fifty per cent.

e made as follows, viz:

1, 94 entries calling for 24,066.74 acres; Nevada, 128 en- ' acres; Oregon, 13 entries, 6,115.83 acres; Arizona, 43 .31 acres; Dakota, 2 entries, 720 acres; Idaho, 18 entries, .; Montana, 33 entries, 38,902.54 acres; New Mexico, 25 i2 acres; Utah, 74 entries, 12,865.25 acres; Washington, 0 acres; Wyoming, 93 entries, 26,601.48 acres.

Fort Kearney Military Reservation.

Information was given in the last annual report, page 51, concerning this reservation, which lies partly in the Grand Island and part in the Platte land districts, Nebraska, and which originally embraced a total area of 72,240.47 acres. After subtracting therefrom the contents of sections 16 and 36 falling to the State under the act for common schools, there remained 68,432.96 acres, which were to be disposed of to actual settlers according to the provisions of the act of Congress of July 21, 1876 (19 Stats., pp. 94, 95). Of the 68,432.96 acres had been entered at the close of the fiscal year ending June 30, 1878. This left 35,518.96 acres. During the fiscal year ending June 30, 1879, there were entered 7,514.41 acres, and at that date there remained subject to disposal under the provisions of the act of July 21, 1876, 28,004.55 acres.

Detroit arsenal grounds.

It was stated in the last annual report, page 51, that 122 of the lots into which the Detroit arsenal grounds were subdivided—although the improvements, at \$50,065—were left unsold. Since the report was written, the sale having been adjourned from time to time, more lots were sold at their appraised value of \$575, which, added to others previously sold (appraised at \$510), but inadvertently omitted in former statements, makes the total number of lots sold 35, and the number yet to be sold, 118, appraised with improvements at \$48,980. The district land officers at Detroit, Michigan, report that the estimate having been made before the late shrinkage in real estate values is fully realized, is found to be too high, and that the remainder cannot be readily disposed of at the prices now established. In view of the opinion of the gentlemen who composed the board by which the existing appraisement was made, as shown by a written communication from them.

In view of the fact that the continuance of the public sale under the act of Congress of March 3, 1875 (18 Stat., p. 15) has cost considerable expense, and has comparatively little result in the way of sales, I would respectfully recommend the passage of an act authorizing a reappraisement of the lots and improvements yet unsold, and providing that, after the same shall have been sold at public sale, at the value thus established, any lots not then sold shall be subject to ordinary private entry at the appraised value.

Paawnee Reservation in Nebraska.

As was stated in the last annual report, page 52, the lands of this reservation, comprising 278,837.20 acres, were brought into public offering, after survey and appraisement, pursuant to the act of Congress of April 10, 1876 (19 Stat., p. 28), during the period from the 10th to the 19th of July, 1878, both days inclusive, when 13,129 acres were sold. This sale left 265,707.91 acres subject to disposal under the provisions of that act. After the public offering and during the fiscal year ending June 30, 1879, 17,254.38 acres were disposed of at prices ranging from \$2.50 to \$6.00 per acre. At the close of the fiscal year, the area remaining subject to sale embraced 248,453.53 acres.

Sac and Fox and Otoe and Missouri Indian Reservations in Kansas and Nebraska.

Portions of the Sac and Fox and of the Otoe and Missouri Indian Reservations in Kansas and Nebraska, embracing 6,398.20 acres of the former, and 119,846.17 acres of the latter, were brought into market for sale to actual settlers only, at the district land office at Beatrice, Nebr., in quantities not exceeding 160 acres, at appraised prices, but subject to the minimum of \$2.50 per acre, under the act of Congress of August 15, 1876 (19 Stat., p. 208), as was stated in the last annual report, page 52, the terms of sale being one-third cash and the remainder in two annual payments, with interest at 6 per cent. During the fiscal year ending June 30, 1878, there were sold of the Sac and Fox lands 3,120.54 acres, and of the Otoe and Missouri lands 25,423.66. The sales were continued during the last fiscal year with the result that of Sac and Fox lands 2,398.14 acres were sold during the year, and of the Otoe and Missouri lands 37,777.20 acres. On the 30th June, 1879, the close of the year, there remained to be sold of the former 879.52 acres; of the latter 56,645.31.

The act of Congress of March 3, 1879 (20 Stat., pp. 471, 472), amends the act of 1876, above mentioned, in some particulars, providing, first, that the lands may be sold "to actual settlers or persons who shall make oath before the register or receiver of the land office at Beatrice, Nebr., that they intend to occupy the land for authority to purchase which they make application, and who shall within three months from the date of such application make a permanent settlement upon the same;" second, that fractional tracts containing a small area in excess of 160 acres may be entered; and, third, that the Secretary of the Interior may, in his discretion, allow additional time for making the deferred payments, not exceeding one year on each payment. Proper instructions have been issued to the district land officers for giving effect to these amendments.

Indian lands in Kansas.

In the annual report of this office for the fiscal year ending June 30, 1876, on pages 20 to 23 inclusive, and in the report for the fiscal year ending June 30, 1878, on pages 52, 53, and 141 to 144 inclusive, will be found a history of the various Indian lands in the State of Kansas.

Nothing has been done during the fiscal year ending June 30, 1879, relative to the "New York Indian Lands," the "Miami Lands," or the "Shawnee Absentee Lands," except in case of the latter, one entry of 80 acres having been allowed under the decision of the Acting Secretary of the Interior, of September 11, 1873, by a party who showed settlement prior to the passage of the joint resolution of April 7, 1873, in regard to the said Shawnee Absentee Lands, I would refer attention to my recommendation of last year, page 144, legislation providing for the disposal of the vacant tracts in provision to that end having been made by Congress, I would commendation referred to, and I also recommend similar of the New York Indian Lands and the Miami Lands, been but a few tracts of either class entered under the provision for their disposal. Parties occupying these lands and desiring to purchase them are constantly writing to this office for

payment for their lands, it was found proper to change the date first fixed upon for laying the lands open to entry, from Monday, September 1, the day first fixed upon, to Monday, November 3, 1879, and the district officers were advised of the date finally fixed upon by letter of the 13th of September last.

Due notice of the reopening of these lands to entry is now being given by publication in the Morris County Republican, published at Council Grove, Morris County, Kansas, and, from the large number of letters received from settlers on these lands and others interested in their purchase, it is thought that they will be disposed of rapidly after the date above given, as the new appraisement has fixed the price of the lands, in most instances, at a much lower rate per acre than formerly under the old appraisement.

Cherokee Strip.—As stated in my last report (pages 52 and 53) Congress passed an act on the 28th day of February, 1877, providing that the unsold portion of these lands, amounting to 295,577.84 acres, should be offered for sale at the proper district offices to settlers at \$1.25 per acre, and that the residue of said lands unsold after one year from the date of such offering should be sold by the Secretary at not less than \$1 per acre, in quantities or tracts not exceeding 160 acres.

The number of entries made and acres disposed of to settlers under the above act for the fiscal year ending June 30, 1878, were 39 entries and 5,189.44 acres, as will be found stated in my last report, page 53, and for the fiscal year ending June 30, 1879, 261 entries and 30,400.73 acres, as shown in the foregoing tabular statement.

The time for the entry of these lands by actual settlers having expired in the month of March of the present year, instructions were issued, pursuant to the provisions of the act, to the district officers at Independence, Wichita, and Larned, under date of March 31, 1879, to offer, after due advertisement, all of the unsold portion of these lands, amounting to 259,967.67 acres, at public sale to the highest bidder, but at not less than \$1 per acre, in tracts not exceeding 160 acres.

In accordance therewith the said lands were duly advertised and offered and sales effected, in the months of July and August, as shown by the following table:

Office.	Date of offering	Area sold.	Rate per acre.	Amount.
		<i>Acres</i>		
Independence	August 13, 1879 ..	3,068.73	\$1 00	\$3,068 75
Wichita	August 13, 1879 ..	4,106.55	1 00	4,106 55
		80.00	1 50	120 00
Larned	July 13, 1879 ..	673.02	1 00	673 02
Totals .....	.....	7,928.32	.....	7,968 33

The remainder of these lands, amounting to 252,039.35 acres, became subject to private entry, at \$1 per acre, at the close of the public offerings at the several district offices.

previously reported (14,628.48 miles), make a total of 15,071.14 miles of such roads, distributed as follows:

States and Territories.	Miles.	States and Territories.	Miles.
Alabama.....	822	Florida.....	247
Arkansas.....	620.16	Illinois.....	703.72
California.....	1,228.89	Indian Territory.....	155
Colorado.....	298	Iowa.....	1,673
Dakota.....	108	Kansas.....	1,034
Louisiana.....	152	Oregon.....	227
Michigan.....	1,005	Texas (where there are no United States lands).....	342.87
Minnesota.....	2,030.50	Utah.....	255
Mississippi.....	408	Washington.....	100
Missouri.....	703	Wisconsin.....	533
Nebraska.....	833	Wyoming.....	400
Nevada.....	460	Total.....	15,071.14

During the fiscal year there were certified for railroad purposes 278,334.11 acres, showing a decrease as compared with the previous year of 328,006.54 acres. No certifications were made in favor of wagon-roads or canals.

Ten patents were issued, covering 77 pages of record, and five approved transcripts, covering 16 pages of record.

The lists of selections awaiting examination at the close of the fiscal year covered 1,250,573.77 acres.

In their appropriate place in this report will be found carefully prepared tables showing the condition of the adjustment of the various land grants at the close of the fiscal year.

The number of contested cases received from the organization of the division in 1872 to June 30, 1879, was 3,793, of which 2,311 had at the latter date received final action and been closed; 947 had been acted upon but not finally disposed of, and 535 remained on which no action whatever had been taken by the office.

Of *ex parte* cases, 6,387 were received up to the close of the fiscal year, 2,935 of which had at that time been finally acted upon and closed; 528 had received action, but yet remained open; and 2,924 had received no official attention save their entry upon the books of the division.

The number of letters received during the fiscal year was 5,001, and of letters written 5,212. The record of the latter covered 4,807 pages.

Since my last annual report many important decisions affecting railroad interests have been made both by the department and the Supreme Court.

In the case of *Yates vs. California and Oregon Railroad Company*, it was held that a pre-emption claim, though valid and subsisting at the time the grant to a railroad company took effect, which was afterwards abandoned, does not except the tract covered thereby from the operation of such grant, but the tract inures to the grant as of the date when it became effective.

In *Kniskern vs. Hastings and Dakota Railroad Company*, it was held, under the act of March 21, 1864, which relieved certain persons, then absent on duty in the military or naval service, from personal presence at the district land office, and authorized them to make the required affidavit before their commanding officer, and to appoint a representative to file their applications, that an entry made by a single man in the

the does not pass from the government under a . delivered to and accepted by the grantee.

Northern Pacific Railroad Company, it was held which the company is required to complete its road by July 4, 1880; that the only right reserved to the company in case of a failure by the company to comply with the condition of the grant is to "do any and all acts and things which may be necessary to insure a speedy completion of said road," any differing from most railroad grants in respect of forfeiture in case the road is not built, and that a "definite location," may be changed by the company.

Missouri River Railroad Company *vs.* Chicago, Milwaukee and St. Paul Railway Company it was held that the grant to the company of May 12, 1864, vested an estate *in presenti*; that the grant was not restricted to the limits conterminous with the lands ceded by quantity and lateral limits only; and that the court was necessarily called upon to decide upon rights of the company not in conflict with the granting act, as exemplified by companies having constructed the road.

Under decisions of Supreme Court.—Under the decision of the Supreme Court in the case of the Leavenworth, Lawrence and Kansas Railroad Company *vs.* The United States, which held that in railroad grants indemnity was not given for lands of the grant disposed of prior thereto, a revision of the grant was made necessary. Under the most favorable progress of such work would be apparently slow, but in all the dispatch compatible with correctness, the work has been ably procrastinated and retarded by the smallness of the division.

grants for the Hastings and Dakota, Wisconsin and St. Paul and Northern Pacific, Saint Vincent and the Grenadines (road only), Southern Pacific (main line), and Denver City Railroad companies were reported as examined and the quantity of lands each considered under the decision ascertained. During the fiscal year 1879, no further examinations had been made, the work of this branch of the office having been otherwise occupied. At the last named date, however, the grant for the Saint Vincent and the Grenadines (Road Branch) Railroad Company has been carefully examined and the quantity it will receive under the decision re-

Lands reserved for adjustment of foreign grant.—The decision of the Supreme Court in the case of Newhall *vs.* Sanger, which held that lands reserved for the adjustment of foreign grant claim, and settled the question adversely to the grant claim, holding that lands reserved for the adjustment of foreign grant claim, became a part of the public lands of the United States at the time of making the railroad grant did not change, on their release from reservation by adjustment of foreign grant claim, became a part of the public lands of the United States. This is of importance in the adjustment of railroad grants in California, and will render necessary a great deal of work. Prior to its rendition the department had held that lands attached to such lands on their release from reservation for the construction thousands of acres were patented

to the companies, to which, under the beforementioned decrees, were not entitled. Consequently each grant will have to be made in connection with the foreign grant claims, and lists of lands erroneously patented made up for appropriate action thereon. It is stated in my last report that at that time the lands embraced in the grant only—the Manuel Diaz—had been ascertained and laid before the Secretary, and that another—the Moquelamos—was partially prepared. The latter has been completed and the matter laid before the Secretary, and suit thereon against the Western Pacific Railroad Company has, at the direction of the Attorney-General, been instituted.

The records of this office are not perfect enough to establish the titles of lands for the many foreign grant claims which, genuine or fraudulent, were presented and fought to a termination, successful or unsuccessful, after legal conflicts many years in duration. These can only be ascertained from the records of the surveyor general of California. It has been called upon to give the necessary information. Some idea of the extent to which these grant claims may or do conflict with the public grants may be formed from the statement that the confirmed and surveyed claims alone are 576 in number.

Restoration of Missouri River, Fort Scott and Gulf Railroad.—By the act of March 3, 1877 (19 Stat., p. 404), part of the act of March 3, 1875, granting of lands to the State of Kansas to aid in the construction of the Kansas and Neosho Valley Railroad was repealed, the compensation for the lands not disposed of by it, and payment of money for those disposed of, was released from the obligations imposed by the act, and the lands surrendered were to be restored to market value by proclamation of the President, and opened to settlement and purchase under the homestead laws only. By proclamation of the President the lands affected, with the exception of a few tracts of doubtful status which require future action, have been restored to entry under the homestead laws only.

Restoration of lands in Iowa withdrawn for Mississippi and Missouri Railroad.—An act approved June 15, 1878 (20 Stat., p. 133), providing for the restoration to settlement, under the pre-emption and homestead laws, of all vacant unappropriated lands heretofore withdrawn for the construction of the Mississippi and Missouri Railroad in Iowa, situated more than two miles from the amended line of route as located under the act approved March 3, 1864, and not including any lands embraced in the confirmed grants of January 31, 1873.

A complete list of all vacant lands affected by this act, embracing about five hundred acres, was prepared and forwarded to the land office, and the restoration will be effected in a short time.

Right of way railroads.—The number of railroad companies entitled to the benefits of the act of March 3, 1875 (18 Stat., p. 482), granting railroads the right of way over the public lands, is continually increasing, until, at present, the adjustment of their rights forms a large part of the work of this division. A table showing the railroads entitled to the benefits of the act will be found in another part of this report.

Payment for surveys of railroad lands.—The sundry civil act of July 31, 1876 (19 Stat., p. 121), contains the requirement that before any land granted to any railroad company by the act of March 3, 1875, shall be conveyed to such company, or any persons entitled to the same under any of the acts incorporating or relating to said act, such company is exempted by law from the payment of such

the Treasury of the United States the cost of conveying the same by the said company or enactment, buried in an appropriation bill, '8.

on from payment of such costs was considered matter of the grant to the Southern Pacific re grant to the State of Kansas for the Saint Railroad Company. It was held that, in the l grants falling within the terms of the act, must be met before certifications or patents ed to the company. The provisions of the owever, as not applying to grants made to unction of railroads not named in the granting is to a State in trust for the benefit of a com- e is simply an intermediary and not a benefi- ed must be made.

-In *Platt vs. Union Pacific Railroad Company*, n, 1878, the Supreme Court of the United States constitutes a "disposal" within the meaning act of July 1, 1862, and that lands thus ent- t to pre-emption settlement and entry. Fol- secretary modified the decisions of the depart- mott *vs. The Kansas Pacific Railroad Com-* tractions have accordingly been issued.

y reason of non-completion of roads.—In my re- rs I submitted a list of railroad grants which the roads for whose benefit they were made ed within the period prescribed by law, rec- tion of Congress be specially called to the sub- eurged, looking either to the enforcement of the - extending the time for the completion of the ing toward enforcement of the forfeiture have ess, but thus far no definite result has been lations on the subject are respectfully renewed, t legislative action will be taken at an early t the corporations or the restoration of the lands

ust closed no grants have lapsed.

ke Michigan Railroad grant, heretofore reported itted from the list of such grants, Congress i of 3d of March, 1879, released to the State of rsionary interest in the lands which the United of the lapsed grants, carefully revised, will be port.

ision has sorely felt the want of adequate cleri- fiscal year. The many important changes in of cases under the act of April 21, 1876, exam- effect to the Newhall-Sanger decision, and the the advanced adjustments of many of the rail- idly increasing current work, have prevented erwise have been made.

erical force is in better condition than for some quate to perform the work; imposed upon the ll the following decisions affecting railroad

PAPERS ACCOMPANYING THE

Mineral lands.

ing the last fiscal year much excitement over alleged mines (principally of argentiferous galena) has existed in certain parts of Arkansas, principally in Montgomery County, Camden

eral applications for appointment as deputy mineral surveyors have been made, and some have been acted upon favorably, it is estimated that a large number of mineral claims had been located but unsurveyed for want of such officers.

estimate of the value of the discovery can be made on the basis of the knowledge possessed by this office. Representations have been made which were sufficient to justify me in withdrawing the lands from sale under the agricultural laws until their proper value should be determined by hearings duly advertised. The rapidly increasing interest and vigor which have now for months been centered in said locality would seem to indicate a possibility of rich mines.

It has also been represented likewise that large deposits of coal exist in the Huntsville and Montgomery land districts in Alabama. A competent geologist was deputed to make an examination of the same, and his report, already submitted to you, shows the existence of large deposits of both coal and iron.

As the coalfields are so far removed from means of transportation, and the expense necessarily attending their proper development, and the available capital in that region so limited, that it is recommended that the lands be sold as agricultural only.

It is also worthy of mention that in Missouri and Kansas all lands are sold for disposal only under the agricultural laws (act of May 1854), and their situation and the comparative value of the deposits of coal and iron only furnish no better arguments for the exception of them from the operation of the mineral laws than would those in Alabama. It is also very probable that to withhold said lands in Alabama from sale except as mineral, might postpone their disposition for years.

I respectfully recommend that the advisability of selling the same in Alabama in the same manner as now provided in certain States above named be favorably suggested to Congress.

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Swamp and overflowed lands.

During the year just closed 478,462.27 acres of land have been reported to this office under the acts of Congress granting swamp and overflowed lands to the several States, making the total area reported under said acts 68,995,007.53 acres.

Of these embracing 44,712.57 acres have been formally approved by Congress, the whole amount thus approved to 51,532,623.08 acres, and 225.31 acres approved to the State of Louisiana pursuant to the provisions of the act of March 2, 1849, under which the approval has the force and effect of a patent.

Patents have been issued under the act of September 28, 1850 (sections 2479, 2480, and 2481), for 7,000 acres, and a number of acres patented under said act under the act approved March 2, 1855 (

2482), 419,534.11 acres have heretofore been patented in lieu of that amount of land located with military bounty land warrants or scrip.

The aggregate area definitely disposed of by approval under the act of 1849 and by patents under the other acts relating to swamp and overflowed lands, from the date of the passage of said acts to the end of the fiscal year, is 48,194,307.11 acres.

The following summary of the more important work connected with the adjustment of the grants above cited is submitted:

Number of letters received	958
Number of letters written	1,105
Pages of letter record covered.....	1,064
Number of lists prepared for approval.....	15
Certified copies of lists prepared and transmitted to the governors of the several States and the local land offices.....	31
Number of patents executed.....	7
Pages of patent record covered.....	30
Pages of swamp selection record covered.....	253
Number of contested cases decided.....	110
Number of tracts examined with the field notes of survey to determine their character	1,403
Number of tracts upon which claims for indemnity have been adjusted on testimony submitted	637
Certified copies prepared for individuals.....	9
Entries and locations held for cancellation for conflict with claims under the swamp grant.....	88

The correspondence has been kept up as far as possible, and quite a number of old cases have been finally disposed of.

Lists embracing a large area of more recent selections that have been in the office for some time have been noted on the records, and examinations have been made which will result in the final disposition of claims under the several swamp land grants for a large amount of land during the ensuing year.

New selections are being made and reported, and the work of adjusting claims for land selected many years ago has become more difficult with lapse of time. The number of contested cases is rapidly increasing. Claims for swamp land indemnity to a very large amount have been filed, and, in view of the arrangements for investigating such claims now determined upon, the adjustment of these cases will necessarily be delayed until an additional clerical force can be assigned to this division.

* * * * *

Adjustment of accounts.

sioner of the General Land Office is by law made the public accounts relative to the public lands. The accounts registers and receivers, the accounts of receivers acting agents, timber agents' accounts, State swamp land interests, State fund accounts, and claims for the repayment of for lands erroneously sold, are received, examined, and recorded in the division of accounts.

of registers and receivers embrace all disposals of the land of Indian trust lands at the several district land offices

States under the various laws authorizing the same. are examined, verified, and registered in this division before being transmitted to the other divisions of the office. Instructions are given in this division to registers and receivers relative to the preparation and transmittal of such returns for the correction of

rors and upon numerous questions of detail which arise in connection therewith. Special inquiries relative to the disposal of the public lands to other matters pertaining to the financial department of the land administration are answered and explanatory tables appended to this division.

The general work of the division of accounts for the fiscal year ending June 30, 1879, may be thus summarized:

Letters received.....
 Letters written (covering 3,496 pages letter post).....
 Audited and adjusted and reported to the First Comptroller of the Treasury for final settlement:
 Quarterly accounts of receivers of public moneys.....
 Quarterly accounts of receivers acting as disbursing agents.....
 Member agents' accounts.....
 State fund accounts.....
 State swamp land indemnity accounts.....
 Payment accounts for lands erroneously sold.....

The above accounts covered 2,002 pages folio post and 254 pages of the record of the reports on said accounts, together with the special statements and other written matter, embraced 2,656 pages. Tabular statement No. 2, appended to this report, was prepared for the division of accounts, and represents a great amount of labor.

State fund accounts.—During the last fiscal year the State fund accounts finally adjusted, recorded, and stated to the First Comptroller of the Treasury embraced the following:

Alabama and Mississippi two, three, and five per cent. accounts for the years ending 31st December, 1860 and 1861.

Arkansas and Louisiana five per cent. accounts for the years ending 31st December, 1860 and 1861.

Colorado, Kansas, Minnesota, Michigan, Nebraska, Nevada, and Wisconsin five per cent. accounts for the fiscal year ending June 30, 1878.

The fund accounts of Alabama, Arkansas, Florida, Louisiana, Mississippi have been made up and stated to June 30, 1879, but in consequence of repayments on account of lands erroneously sold and the expenses incident to the sale of the public lands in the said States being in excess of the gross receipts, against which both the said States are legally chargeable, nothing has accrued to either of said States since December 31, 1861.

The two and three per cent. fund accounts of the State of Iowa have also been examined up to June 30, 1879, but nothing has accrued to said State since December 31, 1874, to which date all accounts have been reported to the First Comptroller for settlement.

In the case of Iowa, the five per cent. account has been adjusted to December 31, 1873, since which date the repayments on account of lands erroneously sold and the expenses incident to the sales of public lands within said State have been in excess of the gross receipts, against which nothing has accrued since the date alluded to.

Repayments and changes of entry.—At the termination of the fiscal year the unfinished business consisted of—

Repayment claims complete and awaiting adjustment.....
 Repayment claims incomplete and awaiting further evidence.....
 Applications for change of entry.....

Much complaint exists in respect to the difficulty of obtaining repayment under the existing law authorizing repayment in cases of lands erroneously sold of the public lands. By the act of 1825 repayments were

to cases where there was a want of title on the part of the United States to the land attempted to be purchased. The act of 1859 (now sect. 2362 Revised Statutes) extended the remedy to embrace cases in which from any cause, the sale could not be confirmed.

Under recent decisions governing the action of this office in the adjudication of repayment claims, it is held that the statute does not authorize repayments where the United States had, at the date of the attempted purchase, complete title to the land, though by reason of laches on the part of the purchaser, and error on the part of the land department officials, or both, the legal title has been transferred to some other claimant, and therefore cannot be conveyed to the original purchaser except through the action of the courts.

It is obvious that reasons other than that of a want of title in the United States may prevent the confirmation of a sale, since an entry may be erroneously initiated, or the proceedings may be subsequently voided in consequence of some non-compliance with the laws or regulations, or other error or neglect for which the purchaser may or may not be primarily responsible; and if a sale be made otherwise than in accordance with law, it is clear that it cannot legally be confirmed, notwithstanding the fact that the United States had title to the land when it could have conveyed had no valid objection intervened.

Cases may arise and have occurred where, though no statutory forfeiture was provided, a sound public policy would appear to justify the office in declining to recommend repayment. These are cases in which the entry is canceled because of some illegal act of the party in which fraud or an attempt at fraud is shown to have been an element. The discretionary power vested in the Secretary of the Interior, by which he is authorized to make repayments, would, however, seem to embrace the necessary authority for the proper protection of the public interest against fraudulent attempts to obtain title to the public lands with the necessity of punishing simple errors or merely technical informality by a forfeiture of moneys innocently paid and for which the purchaser has received no valuable consideration.

It would seem clear that where a party has, in good faith, paid money for land which he cannot obtain, his money ought to be returned. The application to purchase and the payment to the land officers of purchase money constitute a part of the contract of sale. If the United States, for any reason satisfactory to itself, does not perform its part of the contract by giving title to the land attempted to be purchased, certainly should not take advantage of its own acts or of the fact of its superior power to retain in its possession money to which it has no legal or equitable right.

Repayment claims are not in the nature of unascertained or questionable demands upon the Treasury. They are claims, not for the money of the United States, but for money improperly in the custody of the United States. It would seem that the law ought to provide for the return of such money to the parties to whom it legally and equitably belongs, without difficulty in the interpretation of the statute, and speedily and with as little trouble and expense to the legitimate claimants as practicable.

Since the passage of the homestead and timber-culture laws and the adoption of the single and double minimum classification of the public lands, a class of cases has arisen the equities of which are beyond question, but which, not having been contemplated by the original acts authorizing repayments, are held not to be provided for under the te

Homesteads.....	14,1
Chippewa half breed.....	
Sioux half breed.....	
Choctaw.....	
Total.....	19,1
Excess transmitted over those issued.....	1,1

During the past year there were returned to this office as located 3 military bounty land warrants, issued under the acts of February 1 1847, September 28, 1850, March 22, 1852, and March 3, 1855, calling for 50,820 acres; showing a reduction from the amount located with similar warrants during the previous year of 33,900 acres.

The following statement will show by States and Territories the locations made therein during the time stated with military warrants under the above-named granting acts of 1847, 1850, 1852, and 1855:

	Acres.		Ac
Arkansas.....	200	Mississippi.....	
California.....	30,340	Missouri.....	
Colorado.....	640	Nebraska.....	
Dakota.....	6,680	Nevada.....	
Florida.....	440	Oregon.....	
Idaho.....	320	Washington.....	
Kansas.....	5,320	Wisconsin.....	
Louisiana.....	200		
Michigan.....	4,040	Total.....	50,
Minnesota.....	840		

There are still outstanding and unlocated 22,805 warrants issued under the said bounty-land laws, aggregating 2,599,760 acres.

The work performed by the office under the said several bounty-land acts from the commencement of operations connected therewith to the present time will be found set forth in detail in tabular statement accompanying this report, which shows the total number of warrants issued, the amount of land embraced thereby, the whole number of warrants located upon corresponding areas of land, with number of unlocated warrants, and quantity of land required for their satisfaction.

As a summary, however, it may be stated that 551,057 warrants calling for 61,007,670 acres, have been issued as bounties to the soldiers of the United States Army for services rendered in the wars prior and exclusive of the recent rebellion, and that 528,252 warrants, appropriating 58,407,910 acres of the public lands, have been located, leaving a balance of warrants to the number and for the amounts above stated still outstanding and unsatisfied.

To show the extent to which land warrants have been issued "bounties" for military services, it may be stated, by way of comparison, that it will require to satisfy those already out with those now located an amount of land in acres equal to all the New England States together with nearly the entire State of Ohio added, and there has already been appropriated by the warrants now located and returned to this office an amount of the public domain exceeding by one million acres all the New England States combined with the added territory of New Jersey, Delaware, and Maryland.

Of this vast number, 551,057, as stated, many are defective in various ways, principally in regard to the assignments. Several thousand—2,983 by actual count—are suspended at this time for this and other reasons, and during the past year a strong effort has been made to examine and dispose of this class of work, and, with the very limited force that could be placed upon it, 290 cases have been relieved and sent

patent. Action, however, has been taken which has resulted in a large decrease of the number of these suspended warrants each year.

The many letters and applications received in relation to the issue of bounty-land warrants, induced me to prepare the following circular:

DEPARTMENT OF
GEORGETOWN
Washington

To answer many inquiries made of this office, the information that bounty-land warrants under general laws are also in the possession of the Commissioner of Pensions, to whom all applications for their location should be sent.

After location upon the public lands, such warrants are in the possession of the Land Office, where the assignments or transfer thereof are numerically filed, under each granting act.

Very respectfully,

Two warrants for 160 acres each granted under the act of 1842, for services in the war of 1812, which require for a limited period the original bounty warrants to be located during the past year, leaving still outstanding warrants under said act, aggregating 19,680 acres.

Six warrants for 40 acres each issued under the act of 1842, entitled "An act for the relief of the heirs of soldiers who have ceased," have been located in the same time, leaving still outstanding warrants for 40 acres each outstanding, embracing 240 acres.

In my last annual report attention was called to the fact that there were in this office 82 warrants issued under the act of 1842, which had been sent to the owners thereof, and their destination, were returned as "dead letters." It is now the duty of the owners to have their warrants called for and claimed by the owners or their heirs, with proof of identity. Correspondence is now being had with the owners, and no doubt result in the speedy delivery of many warrants to their heirs in case of the decease of the owner.

Nine hundred and forty acres embraced in scrips located with agricultural college scrip, issued under the act of 1862, and during the year 58 such locations have been made to patent. Of this number five were "duplicates" of June 20, 1874, which provides that where a scrip has been "lost, canceled, or destroyed without the original," the same may be reissued. Such duplicates are now in this office in lieu of the originals for the location of the same.

Revolutionary bounty-land scrip.—Under the act of June 22, 1860, Virginia military land warrants issued in the war of the Revolution calling for 3,406 acres, and by the issue of scrip in lieu of the same, and located on such warrants, have been presented for location. With these there are now pending under the law calling for 98,748 acres. Payment has been made for 4,835 acres of the public lands during the past year for 4,835 acres of the public lands.

Satisfaction of this class of warrant claims is now being had. They were required by law to have been located by the authorities of the State of Virginia prior to March 1860. Of time, the many changes by death, assignment, and other causes, make it very difficult to substantiate the claims as is required, the present proprietorship of the

All perfected claims of this class have been satisfied by the issue of such amounts of scrip as found due in each case.

Virginia military district of Ohio.—No change whatever has occurred in the condition of the entries and surveys in said district for the past year. It is expected that Congressional legislation will be had at an early day in relation thereto, providing for the survey of all outstanding entries made in said district, and for the satisfaction by patent of these and all other surveys therein, and disposing of all questions involved in the claim of the "Ohio Agricultural and Mechanical College" affecting said lands under the act of Congress of February 18, 1871, by which, upon certain conditions specified therein, all the unsurveyed and unsold lands in said district were ceded to the State of Ohio, and to which the said college succeeded by State legislation.

Since the preparation of my last report the number of clerks in this division engaged upon the work of writing and engrossing patents has been greatly reduced for the want of a sufficient appropriation to pay them.

For this reason the office has lost the services of many experienced clerks, and in consequence this branch of the work has fallen greatly in arrears. This is very unfortunate for the settlers who struggle with poverty and the many hardships incident to frontier life, and, after fulfilling the conditions imposed by the pre-emption, homestead, and other laws as to residence and cultivation, make their proof, and pay their money in the former case, whereby they become entitled to their patents and the office should be enabled to prepare them without delay. The loss of a team by accident, the destruction of crops from any cause, floods, this office with urgent appeals for the deed, that money may be raised with which to repair the accident or subsist the settler and his family until the new crop can be made available. Without the patent the settler is helpless in this emergency.

There are at this date over *ten thousand cases* on hand for patenting as soon as reached in regular order, which with the record in each case makes double the above number to write.

With the present force, it will take at least fourteen months to dispose of the work now on hand, and with the current cases coming from the hands of the bookkeepers the end can never be reached without an increase of the force engaged upon the work.

When patents are ready for delivery, they will in all cases be transferred to the local office where the location or entry was made, and the patent obtained by the party entitled thereto, upon surrender of the receipt, or certificate, as the case may be, unless there have been previously filed in this office with a request for the patent to be delivered as desired by the person sending the same. If the patent be delivered either from this or the local office, a receipt of such duplicate, or, in case of its loss from the local office, a filing in lieu of the same of an affidavit made by the owner of the land, accounting for the loss of the same, and the ownership of the tracts, or a portion thereof embraced in the case the duplicate has been duly assigned by the locator, and the transfer in accordance with the laws governing transfer of land at the place where the land is situated, such assignment will be filed in this office and patent issued accordingly, provided the assignment thereon shall be filed in this office prior to the date of the patent; but in no case will a patent be canceled for the purpose of a reissue in the name of the assignee, where such as assignment was in the possession of the office prior to date of the patent.

transfers of this kind must in all cases be strictly in accordance with the law of the place, and if the assignor be a married man, and the law requires the wife to join in the deed, it must be complied with. In case of failure in this or other vital point the patent will follow the recitals of the certificate and issue only in the name of the original purchaser.

The large accumulation of undelivered patents remaining on the books of this office is being but slowly reduced under all the efforts put forth to place them in the hands of the patentees or the present owners and embraced therein, and I would again urge the necessity of an appropriation sufficient to complete the lists of the same, already commenced before work was stopped, to be furnished the proper officers, in the older States, with a view of bringing to the knowledge of the public in interest the fact that such patents remain in this office and how they can be obtained.

The 7,000 volumes of patent records and 15,000,000 of certificates of patents which patents are founded, and which form the groundwork of the system in the government in all cases, are properly cared for, and systematically arranged in cases and files where any book or paper of all the information can be referred to at a moment's notice.

Attention is again called to the increasing demand upon the office, solely from this division, for certified copies from the records and papers, often causing great interruption of the current work, and it is urged that by proper legislation the money received for such copies, which is now by law turned into the United States Treasury, may be retained in this office for the purpose of employing a clerical force to perform such work.

TIMBER LANDS—TIMBER DEPREDATIONS.

In my annual report to you of last year, a brief statement was made of the efforts that had been made, under the plan approved by the department, for the protection of timber growing upon the public lands, and in compliance with the rules and regulations of the department, it under the provisions of the several acts passed at the second session of the Forty-fifth Congress.

Since then there has been no further legislative action taken by Congress towards the suppression of timber depredations on the public lands, save as follows: In act of March 3, 1879, "To meet expenses in protecting timber on the public lands, forty thousand dollars, to be available immediately." (Statutes, third session Forty-fifth Congress, p. 10.) Under this appropriation investigations of public timber trespass have been made, and efforts have been continued to suppress the depredations yet extensive, and which the interests of the government and the people settling and residing in the region of the public timber lands require should be still pursued with unremitting earnestness.

Special agents have been detailed to investigate trespass and larceny in the various public land States and Territories, and have been transferred from one field to another as circumstances required and they could best serve the public interests. They are now assigned to duty as follows:

Alabama, one; California, one; Colorado, one; New Mexico, one; Florida, one; Louisiana, one; Michigan, one; Mississippi, one; Oregon, one; Minnesota and Wisconsin, four; Washington Territory, one; Oregon Territory, one, the latter agent operating along the line of the Northern and Pacific Railroad.

Reports received from the agents, and from the registers and receivers, show somewhat of the great extent to which timber depredations have been and are still being committed, and the results attending the efforts which have been exerted towards suppressing the same.

In Alabama the suit instituted against the owners of a mill in Butler County, referred to in my last annual report, has been dismissed, said mill owners having made payment of \$4,024.11 in settlement of the trespass, and the amount having been covered into the United States Treasury.

Two agents have been operating in Alabama during the past fiscal year, and have reported many names of trespassers upon the public lands in that State, but many of these persons were employes of mill owners and timber speculators. Several iron and furnace companies have been committing extensive depredations upon public lands entered under the homestead law for the purpose of removing the timber therefrom, and not for improvement and cultivation. The timber taken from these lands was mostly burned into charcoal for use in the furnaces. These cases are now being thoroughly investigated, and civil and criminal proceedings are being instituted.

Trespass, covering several thousand acres of public land, by boxing the trees thereon for turpentine purposes, has been reported, and civil and criminal suits have been instituted against the parties.

Besides a number of persons arrested for trespass upon public timber and bound over to appear at the next term of the United States circuit court, fifteen persons have been tried for timber trespass, convicted, and sentenced to imprisonment for from ten to thirty days, with costs.

Several parties have been reported as operating along the line of the Mobile and Girard Railroad, stripping the land of its timber under cover of title from the railroad company and deeds by tax collector; these facts were duly reported to the governor of Alabama.

One thousand seven hundred and fifty logs taken from government lands were seized by writs of detinue and disposed of at marshal's sale for the sum of \$1,379.50.

Several propositions for compromise have been received, but no definite action has yet been taken.

al loss to the government by the destruction of an estimated at not less than \$500,000. The incunscripted in his action by yellow fever and mes of trespassers have been reported by the nstituted against a number of persons held to

at the next term of the United States circuit lead guilty and were sentenced to fine and im- ie trespasses in this State are committed upon homestead law, the parties making entry evi- of complying with the requirements of said law, of denuding the land of its timber.

es who were indicted for trespass upon public relieved from further prosecution and liability the court the sum of \$9,900, under the provis- cess approved June 3, 1878.

the operation of the act of Congress approved ng the citizens of Colorado, Nevada, and the move timber on the public domain for mining 'large quantities of timber are reported taken urther unlawfully or not can only be determined involve a construction of the scope of said act

In Dakota trespass cases have been reported involving about 2,000,000 feet of timber. A few persons have been tried, found guilty, and the course taken by the department toward suppressing timber trespasses, except in some few localities, seems to be generally approved in the Territory.

In Florida the cases mentioned in my last annual report are still pending in the United States court. Many new cases of trespass have been reported, involving 62,650,000 feet of timber. Suits have been instituted, which bonds have been given amounting to \$63,400, and the cases continued until the next term of court.

Most of the trespasses in this State are directly or indirectly committed by a few leading mill owners and log speculators, and partly upon lands entered under the homestead law by their employes, for whom they pay the entry fees and other incidental expenses. Some difficulty in procuring evidence and bringing suit in certain cases has arisen from the residence of the trespasser being in Florida, while the public timber lands to be cut are in Alabama, whence the logs are rafted to the mills in Louisiana and there manufactured into lumber.

The agents report the boxing of trees for turpentine under contract with certain turpentine distillers. The amount of public land thus appropriated is estimated to be 13,160 acres, and the damage to the government amount to \$13,160. Suits have been instituted and are still pending against parties so trespassing.

In Idaho the registers and receivers report a number of arrests for cutting railroad ties, and in two instances judgment has been rendered against the government to the amount of more than \$13,000.

In Louisiana the past efforts of the special agents in suppressing timber trespasses and depredations have had the effect of greatly diminishing the cutting of public timber in those districts under their charge. Among the prominent citizens and mill men in Calcasieu Parish have been expressed a strong desire for the suppression of such depredations and the preservation of the lumber interests and the credit and good name of the inhabitants, they have openly pledged themselves to discourage and discourage by every means in their power the unlawful cutting of timber on government lands.

The last suit pending in the United States court was settled August 7, 1879, and \$20,000 was covered into the United States Treasury as compensation for timber depredations. Considerable timber taken from lands entered under the homestead law in the vicinity of the Sabine River has been sold to the Louisiana Western Railroad Company has been reported. The efforts of the agent are inducing entries of lands. A number of small lots of logs cut from lands fraudulently entered under the homestead law have been found here and there in the vicinity of the river.

In Michigan several cases of timber trespass have been reported, amounting to 19,111,946 feet. One person pleaded guilty to unlawfully cutting 50,000 feet of timber from government land, and was fined the sum of \$300 by the United States district court.

Information has been received stating that the international boundary, and lumbering enterprises in the Marquette district and on the St. Ignace River. Several cases of heavy depredations on the part of the Indians are being investigated by our agent.

In Minnesota the efforts of the government agents in the investigation of timber trespasses continue. A number of which have been settled without litigation.

stampage to the amount of \$2,634.87, which amount has been covered into the Treasury. Many cases of old trespass, involving a large amount of timber, are still pending in the United States court. Several cases of recent trespass reported by the agents, to the amount of 336,791 feet of timber, are being adjusted.

It has been reported that trespass to the extent of 15,000,000 feet of timber has been committed upon the unsurveyed public lands located with half breed scrip, the trespassers not having first complied with the conditions of the law in regard to locating such scrip.

Extensive trespassing has been reported along our northern national boundary line, where large quantities of lumber and a great number of railroad ties for the use of the Canadian Pacific Railroad Company have been taken and shipped across the line into Manitoba. How to arrest it is a grave question, in view of the great distance of the localities from the United States courts.

In Mississippi it has been found, from observations made by United States deputy surveyors in their connection with efforts made to suppress timber depredations, that in the southern part of the State, wherever it was found profitable to cut and remove government timber, it has been universally done. For more than twenty years the work of spoliation has been carried on, until now there is not a stream in the State emptying into the Gulf of Mexico and large enough for floating logs the banks of which have not been denuded of all their valuable pine timber.

The operations of the agent have been seriously interrupted by the prevalence of yellow fever and the establishing of quarantine. The State laws are such that it is extremely difficult to secure evidence necessary to the successful prosecution of trespass cases.

Ninety-seven thousand one hundred and sixteen logs are reported as unlawfully cut from public lands on the banks of the Hobolochitto, Red, and Black Creeks, and suits have been instituted for the recovery of the value of the timber and the punishment of the trespassers.

Report is made of trespass covering a large acreage of public timber lands by boxing the trees thereon for turpentine purposes.

In Missouri extensive timber trespassing in Camden County and along the whole region of the Osage River has been reported, and will be investigated at an early day. It is estimated that last year 500,000 railroad ties were cut and rafted through the Osage River, a large proportion of which were cut from government lands pre-empted for the sale thereon.

For timber trespass are pending in the court 10,500.

For extensive depredations upon the public timber the agent is actively engaged in a thorough investigation, instituting suits. In cases where suits have been rendered in favor of the government to the amount of \$543.48 has been paid.

As well as Colorado, the manufacture of timber on public lands and the sale of them to the Union Pacific Companies has become a great monopoly, and the companies are cutting and delivered thousands of railroad ties and have realized vast sums of money. Numerous cases of trespass on the unsurveyed public lands bordering the North Platte River, and from the public lands on the French and Brush Creeks no less than

1,000,000 railroad cross-ties have been taken. The sum of \$20,267.19 has been paid into the United States Treasury in settlement for 810,687 railroad ties unlawfully taken from the public lands. Mill owners and charcoal companies in Wyoming have been reported as trespassing heavily on the public timber, and one very extensive lumber and charcoal company is reported as having cut during the last season more than 1,000,000 feet of timber and consumed nearly 80,000 cords of wood in the manufacture of charcoal, much of which timber was obtained from the government lands. In one small section of this Territory the United States deputy surveyor reports 200,000 cords of wood, 1,000,000 feet of saw logs, 40,000 fence poles, and 80,000 cross-ties as having been taken within a few years.

One suit pending at the last term of the United States court in Wyoming has been settled by the department, and none have since been instituted.

Parties seem disposed to cease trespassing where there is a probability of detection; otherwise it would be carried on as extensively as ever.

In Utah the cutting of public timber is carried on to a large extent, but mostly for domestic and mining purposes.*

From Wisconsin letters were received early in the past fiscal year, stating that public timber trespassers were becoming so numerous that honest lumbermen could not compete with them, and that the evasion of the homestead law for the purpose of securing a color of title under which timber is taken was the worst feature they had to contend with, as nine-tenths of the homestead entries were made for the purpose of stripping the land of its timber.

In view of these facts, special attention has been paid to timber trespass in this State. Many new cases of trespass have been reported, involving 13,257,624 feet of logs, 767 cords of wood, 1,100 railroad ties, and 50 cords of tan bark: 2,156,319 feet of logs and 262 cords of wood have been delivered to the special agents on demand.

A large number of persons have been indicted, and many suits are now pending in the courts. The sum of \$3,363.08 has been covered into the United States Treasury on account of timber depredations.

In all cases where the agents could trace the logs cut by any trespasser upon the public lands into the possession of any mill company or lumber speculator, they have notified said company or speculator that the government would hold them responsible for the logs, or the value thereof, until the cases against the trespassers should be legally disposed of.

Reports from the agents and others show that while trespassing upon public timber lands in this State has been extensively carried on for a number of years past, the material has changed hands so often, and the trespasses committed so long ago, it would be very difficult to prove any cases now. Even in trespass cases of later years it is very difficult to collect sufficient evidence, as many of the saw-mill owners are, or have been, connected with the trespassers upon public timber lands, and have agreed among themselves not to disclose any thing;

*Much complaint is made, however, of the cutting of small timber less than eight inches in diameter, contrary to the departmental regulations made for the purpose of observing the enactments of the law for the protection of the undergrowth of timber, as set forth in act of June 3, 1878. Such timber is found very convenient for use in timbering the mines, and is used apparently by general consent; but if the present destruction of the small timber continues, it is feared that a great portion of the country will be denuded of its undergrowth within two years. The mine owner who contracts for the timber should be prosecuted rather than the man who cuts the timber for him.

and information has been received that the woods have in several places been set on fire in order to destroy evidence.

Four special agents are endeavoring to obtain testimony sufficient to sustain the suits now pending, and are collecting evidence of new trespass cases for the purpose of instituting suits. There is no difficulty in ascertaining the fact that large quantities of timber have been unlawfully cut from public lands, as the agents report that at least 105,000,000 feet of logs are now collected in booms in the Wisconsin River; but it is difficult to ascertain when and by whom they were cut, and just what portion of them were unlawfully taken from public lands.

In the turpentine orchards of Florida, Alabama, and Mississippi much injury results to the public timber by reason of frequent fires, which either kill the trees or burn them so badly around the boxes that in a high wind they readily break and fall. After the yield of turpentine has become exhausted cattle owners sometimes spread fire *ad libitum* over the forests, and in one such instance by the raging of the fire for a single night more than a million pine stumps remained from what had been so many valuable pine trees before being boxed for turpentine purposes, no less than half of which were on government lands.

Reports have been received of wanton destruction by fire in the public timber forests on the mountain slopes of Utah. In one case 10,000 acres on unsurveyed land were thus destroyed. In the broken sections of country where there is much fallen timber and no water, it is difficult to stay the progress of these fires. There are many theories as to their origin, some stating that they spread from campers' fires, and others asserting that proof can be adduced that they are the work of men using large quantities of fence poles, who deliberately set fires in the best groves in order to deaden the timber and make it light and easy to haul away. If the fires are often repeated the result will be serious in its climatic influences, and especially will the snows, which now often lie till August, become melted in June, and so destroy the value of the mountain streams, thus swollen, for irrigating purposes.

The powers of the department are so enfeebled by the limited appropriations for detecting and punishing timber trespassers that but a tithe of the plunder and destruction of the timber on the public domain can be arrested. There is great necessity for more prompt and vigorous action than the government has heretofore taken for the protection of its interests.

The work during the past fiscal year of the special division of this office having charge of the business arising under the efforts of the department to investigate and suppress timber depredations is thus stated:

Letters received.....	1, 224
Letters written.....	734
Covering pages in letter record.....	564

PRIVATE LAND CLAIMS.

vey, sale, or other disposal of the public lands. e includes the work of segregating therefrom by erous private claims arising under grants of ign powers which exercised sovereignty over before they came under the jurisdiction of the ansferring the title to the claimants, pursuant or. All matters of this kind, with others par- of the same character, are placed under the division of this office.

* * * * *

ongress, on the 22d of June, 1876, passed an act repealing 3 of the Revised Statutes of the United States, which inhibited disposal of the public lands in the States of *Florida*, *Alabama*, *Mississippi*, *Louisiana*, and *Arkansas*, otherwise than to actual settlers, and the provisions of the homestead laws. The repealing act provided that public lands affected thereby should be offered at public sale, if practicable, according to the provisions of existing law, and that they should not be subject to ordinary private entry until after they were offered.

The carrying of this law into effect made necessary a vast amount of work, in addition to the current official business of the office.

In order to ascertain and select the vacant tracts for restoration to the market, it was deemed proper to make up descriptive lists thereof from the records of this office, and after comparing them with similar records from the records of the several district land offices, and correcting all errors found to exist therein, to have executive proclamations prepared and issued, and the land offered for sale in the manner prescribed in chapter 7, title 32, Revised Statutes of the United States.

The public lands in the State of *Florida* have now all been proclaimed and offered at public sale. The lands embraced in the former Gainesville land district, which lie south of the base line, were offered at the district land office at Gainesville on the 29th October, 1878. The lands embraced within the former Tampa district, which comprise the peninsula of Florida lying south of the line between townships 10 and 20 south, were offered on the 15th April, 1879. The lands embraced within the former Tallahassee and Saint Augustine districts, and a small portion of the former Newnansville district lying north of the base line, were offered on the 6th May, 1879.

The vacant public lands in the State of *Alabama*, included under Saint Stephen's, Demopolis, Elba, Greenville, Montgomery, and part of the former Lebanon districts, comprising considerably more than one-half of the State, were proclaimed and offered, the first proclamation at the Montgomery land office November 19, 1878, and the second under at the Mobile office on the 26th of the same month. The perfecting the lists of public lands in the northern part of the State, comprising the former Tuscaloosa and Huntsville land districts and a northern portion of the former Lebanon district, was suspended until an investigation could be had in view of allegations having been made that the lands were in a great part *mineral*, and not legally susceptible of disposal as agricultural lands. An examination of the alleged mineral lands was made by a special agent dispatched to Alabama for the purpose, and the lands shown by his report to be mineral, covering more than one-half of the Huntsville district and probably one-third of the Tuscaloosa district, have been withheld from offering. The public lands in the Huntsville district not withheld as containing mineral, and the northern part of the former Lebanon district, have just been proclaimed and will be offered at the district land office at Huntsville, January 10, 1880, while that portion of the public lands in the former Tuscaloosa district not reported as mineral is now ready and will be proclaimed and offered at an early day.

The vacant lands in the State of *Mississippi* were all offered at the district land office at Jackson, December 3, 1878.

In the State of *Louisiana*, lists have been made up embracing all vacant public lands found to be vacant on examination of the records

office and of the district offices. The lands found to be vacant in the former Opelousas district were proclaimed and offered at the district land office at New Orleans, May 26, 1879. The lands in the Southeastern, Greensburg, and Monroe districts were offered at the same place, August 26, 1879. The residue of the lands in the State, comprising the Northwestern or Natchitoches district, will be proclaimed as soon as discrepancies between the records of this office and the records of the district office at Natchitoches can be inquired into and the errors corrected.

The vacant public lands in *Arkansas* have all been offered at public sale, the offerings having taken place as follows: One at Harrison, beginning October 1, 1877; one at Little Rock, beginning on the 22d of the same month; and one at each of the district offices at Little Rock, Camden, and Dardanelle, beginning February 4, 1878.

ABANDONED MILITARY RESERVATIONS.

The sixth section of the act of Congress, approved June 12, 1858 (10 Stat., p. 336), provides that lands embraced in abandoned military reservations, except in Florida, shall not be subject to the operation of the general laws for the disposal of the public lands of the United States and they can only be disposed of in such manner as may from time to time be provided for by special enactment.

The act of Congress of February 24, 1871 (16 Stat., p. 430), provides for the disposal of the following useless and abandoned military reservations: Forts Lane, in Oregon; Walla Walla, in Washington Territory; Camp McGarry, in Nevada; Zarah, in Kansas; Sumner, in the Territory of New Mexico; Jesup and Sabine, in Louisiana; Wayne and Smith, in Arkansas; a part of Abercrombie, in Minnesota, and a portion of Bridgeport in the Territory of Wyoming.

The reservation of Fort Walla Walla, in Washington Territory, was returned to the custody of the War Department, as again required for military purposes.

The lands embraced in the reservations at Fort Lane, Fort Zarah, and Fort Jesup were offered at public sale. In the case of Fort Lane there were no bidders. In the case of Fort Zarah and of Fort Jesup there were only a few tracts bid for and sold. Since the offering, the lands covered by these reservations have been subject to private entry at the appraised value, as provided for in said act of 1871.

Congress, by act approved January 30, 1879, provided for laying open the lands formerly embraced in the Fort Wayne, Arkansas, military reservation to entry in the same manner as other public lands in said State. Instructions were accordingly issued by this office to the local land officers at Harrison, Ark.—the district in which said reservation is embraced—March 24, 1879, in pursuance of which forty-five homestead entries have been made, covering 5,198.45 acres, leaving 6,870.55 acres of the reservation remaining unentered.

In the case of the other reservations mentioned in said act of 1879, further action of Congress is deemed necessary for the proper disposal of them, as stated in former reports of this office. In regard to Fort Sabine, Louisiana, Camp McGarry, Nevada, and part of the Fort Bridgeport reservation in Wyoming Territory, I renew the recommendation made in former reports that Congress legislate for opening the lands to disposal as other public lands, as was done in the case of Fort Wayne, Arkansas, under the act of January 30, 1879, above alluded to. The same action is recommended in reference to Fort Thorn, New Mexico, and Camp Floyd, Utah, renewing the recommendation in regard thereto found on page 141 of the last annual report of this office.

RESERVATIONS OF PUBLIC LANDS FOR MILITARY PURPOSES

I have to report that during the fiscal year ending June 30, 1879, reservations of public lands for military purposes were declared, enlarged, as follows, viz:

In Colorado.—By President's order of January 28, 1879, a reservation six miles square at Pagosa Springs, excluding the one mile reserved as a prospective town site, May 22, 1877, was declared for Lewis.

In Dakota.—By President's order dated December 18, 1878, under provisions of the act of Congress approved June 18, 1878, the reservation of Fort Meade was declared, it being 2 miles wide and about 6 miles long. The public surveys were extended over so much of the reservation as falls in township 5 north, range 5 east, Black Hills meridian, prior to the date of the order reserving the lands. A small part of the reservation falls in township 6 north, range 5 east, which is unsurveyed.

In Montana.—By President's order dated August 5, 1878, Fort Missoula reservation was enlarged by adding to the post reservation the south half of northeast quarter and the southeast quarter of section 25, of township 13 north, range 20 west; the south half of northeast quarter, south half of northwest quarter, southeast quarter of southeast quarter, northeast quarter of southwest quarter and west half of southwest quarter of section 30, of township 13 north, range 19 west.

By President's order dated June 10, 1879, a reservation of timber for Fort Missoula, on unsurveyed land, was declared.

In Nebraska.—By President's order dated June 28, 1879, Fort Robinson was enlarged so that the eastern boundary should be $2\frac{1}{2}$ miles from the flagstaff, and the southern, western, and northern boundaries 2 miles from the flagstaff, making a reserve of 18 square miles, besides an additional tract reserved by the order of November 14, 1876, but not included in the order of June 28, 1879.

By Executive order dated April 28, 1879, Camp Sheridan reservation was enlarged on the south by extending the southern limit 8,300 feet.

Respectfully submitted.

J. M. ARMSTRONG,
Acting Commissioner.

Hon. O. SCHURZ,
Secretary of the Interior.

No. 1.—Tabular statement showing the number of acres of public lands surveyed in the following land States and Territories up to June 30, 1878, during the present fiscal year, and the total of the public lands surveyed up to June 30, 1878; also, the total area of the public domain remaining unsurveyed within the same.

Land States and Territories.	Areas of public lands in States and Territories.		Number of acres of public lands surveyed.				
	In acres.	In square miles.	Up to June 30, 1878.	Prior to June 30, 1878, not heretofore reported.	Within the fiscal year ending June 30, 1878.	Total up to June 30, 1878.	Total area of public lands remaining unsurveyed, and undisposed of, in private land claims surveyed up to June 30, 1878.
Wisconsin.....	34,511,300	52,824	34,511,300			34,511,300	13,822,800
Iowa.....	35,228,800	55,845	35,228,800			35,228,800	7,921,329
Minnesota.....	53,456,840	83,531	30,172,415		304,024.75	30,476,439.75	53,013,997
Kansas.....	51,770,240	80,881	51,770,240			51,770,240	39,061,748
Nebraska.....	48,030,800	75,885	39,926,807		778,764.20	40,705,571	30,038,787
California.....	160,862,640	157,801	44,347,402	340,084.79	1,232,116.07	45,924,583.56	44,723,285
Nevada.....	71,737,600	112,000	11,538,830	290,538.74	532,878.81	12,372,247.55	43,525,477
Oregon.....	60,975,360	96,974	21,127,863	108,498.43	622,251.09	21,858,612.32	67,406,887
Washington.....	44,738,160	69,934	13,831,545	229,182.17	685,865.44	14,746,593.16	68,774,750
Colorado.....	64,880,000	104,500	22,182,809	101,894.89	1,089,758.82	23,374,462.71	73,060,710
Utah.....	54,064,640	84,476	8,869,885	182,713.16	1,089,758.82	9,941,857.5	80,954,089
Arizona.....	72,008,340	113,016	5,281,737		217,810.50	5,499,547.5	53,585,934
New Mexico.....	77,648,640	121,201	8,471,880	38,188.45	333,821.50	8,843,890	
Dakota.....	90,598,480	139,383	21,459,412	285.06	1,167,082.36	22,626,779	
Idaho.....	55,238,160	83,294	6,894,009	98,419.92		6,992,428.92	
Montana.....	92,016,640	143,770	16,543,627		518,724.11	17,062,351.11	
Wyoming.....	62,645,120	97,898	8,101,049	208,180.14	679,948.03	9,079,183	
Missouri.....	41,830,931	65,370	41,824,000	12,930.01		41,836,931	
Alabama.....	32,462,115	50,722	32,462,115			32,462,115	
Mississippi.....	30,179,840	47,156	30,179,840			30,179,840	
Louisiana.....	26,407,440	41,346	25,282,044		(*)	25,282,044	
Arkansas.....	33,410,003	52,302	33,408,720		3,348.41	33,412,068.41	
Florida.....	37,931,520	59,268	39,103,708			39,103,708	
Ohio.....	25,576,960	39,064	25,576,960			25,576,960	
Indiana.....	21,637,700	33,809	21,637,760			21,637,760	
Michigan.....	84,128,640	34,451	36,138,640			36,138,640	
Illinois.....	25,465,003	53,414	25,465,008			25,465,008	
Indian Territory.....	44,154,240	68,901	27,003,680			27,003,680	
Alaska.....	309,579,856	577,380					
Total.....	1,814,768,922	2,635,606	734,311,477	1,823,977.97	8,453,781.88	734,311,296	1,060,197,686

southwestern district, Louisiana, the original surveys made in 1897 having been totally obliterated in the field by the lapse of time, and the inability of settlers and others to describe the lands derived by them to be entered.

R. GENERAL LAND OFFICE, October 30, 1878.

States, Territories, and land offices.	Fiscal year 1879.	Sales of land for cash.		Lands entered under the homestead acts, with amount of government fees, and registrars' and receivers' commissions received thereon.						Lands entered under the timber-culture acts, with amount of government fees, and registrars' and receivers' commis- sions received thereon.						Aggregate of acres disposed of.	Amount received from all sources.	Incidental ex- penses.
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	Amount.	Amount.			
ALABAMA.	1st half.	112.39	\$313.02	50,800.00	\$5,435	\$1,858.00	\$5,291.00									51,002.99	\$5,799.02	\$2,616.08
	2d half.	78.06	186.70	45,214.11	3,030	1,737.00	4,767.00									46,292.77	5,014.20	2,571.19
	Total.	191.05	449.72	96,104.71	6,465	3,595.00	10,058.00									96,295.76	10,813.22	5,187.19
	1st half.	102.99	137.45	2,492.44	185	315.00	500.00									2,692.43	638.05	319.35
	2d half.	66.94	98.46	7,416.06	580	530.85	1,090.85									7,483.00	1,189.31	1,249.95
MONTGOMERY.	Total.	176.93	235.91	9,908.50	745	845.85	1,591.45									10,085.43	1,827.36	2,009.30
	1st half.	647.21	920.64	14,245.59	985	950.20	1,935.20									14,992.80	3,576.54	3,125.26
	2d half.	3,594.91	5,394.40	37,903.79	2,655	1,466.10	4,141.10									41,498.70	10,067.75	3,693.98
	Total.	4,242.12	6,315.04	52,149.38	3,640	2,406.30	6,076.30									56,491.50	13,644.29	6,819.24
	Grand total.	4,610.10	7,000.07	158,162.59	10,850	6,875.75	17,725.75									162,772.69	26,284.87	14,675.72
ARIZONA.	1st half.	7,378.20	4,924.50	1,440.00	115	93.00	208.00	2,490.00	\$155	\$54.00	\$219.00					11,298.20	5,643.00	1,057.93
	2d half.	10,615.00	4,249.00	1,000.68	105	85.50	190.50	800.00	60	20.00	70.00					13,016.37	4,855.50	785.63
	Total.	17,993.20	9,173.50	2,040.68	220	178.50	398.50	3,290.00	205	84.00	289.00					24,314.57	10,498.50	1,843.56
	1st half.	1,438.07	1,061.61	1,659.20	110	90.50	190.50									8,117.88	2,406.11	853.10
	2d half.	409.87	706.00	800.00	25	13.50	88.50									769.57	930.50	714.90

ARKANSAS.		1st half.	2d half.	Total.	1st half.	2d half.	Total.	1st half.	2d half.	Total.	1st half.	2d half.	Total.	1st half.	2d half.	Total.	1st half.	2d half.	Total.	1st half.	2d half.	Total.
Camden		853.46	1,555.19	2,408.65	84,027.07	1,303.65	8,083.65	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Camden		703.94	1,057.15	1,761.09	28,006.47	1,063.01	2,996.01	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		1,557.40	2,612.34	4,169.74	112,033.54	2,366.66	11,081.66	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Dardanelle		804.33	1,731.63	2,535.96	37,417.08	1,516.07	4,171.07	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Dardanelle		463.42	686.53	1,149.95	21,254.12	917.45	2,452.45	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		1,267.75	2,418.16	3,685.91	58,671.20	2,433.52	6,623.52	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Harrison		772.21	905.54	1,677.75	24,188.11	1,010.07	2,680.07	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Harrison		1,047.85	1,400.83	2,448.68	21,336.15	1,005.00	2,580.45	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		1,820.06	2,306.37	4,126.43	45,524.26	2,015.07	5,260.52	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Little Rock		106.29	295.57	401.86	13,026.92	965.00	1,008.17	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Little Rock		567.76	909.09	1,476.85	23,184.79	1,005.00	2,783.58	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		764.05	1,204.66	1,968.71	36,211.71	2,070.00	3,791.75	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Grand total		5,512.26	8,614.92	14,127.18	203,343.70	8,595.40	22,905.49	8,000.00	8,000.00	16,000.00	8,000.00	8,000.00	16,000.00	8,000.00	8,000.00	16,000.00	8,000.00	8,000.00	16,000.00	8,000.00	8,000.00	16,000.00
CALIFORNIA.																						
Bodie		5,491.10	8,983.51	14,474.61	8,360.00	166.00	366.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Bodie		5,491.10	8,983.51	14,474.61	8,360.00	166.00	366.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		10,982.20	17,967.02	28,949.22	16,720.00	332.00	732.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Humboldt		17,032.20	31,204.49	48,236.69	21,530.19	1,160.03	2,565.03	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Humboldt		4,707.11	8,677.89	13,384.00	7,169.59	339.50	804.50	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		21,739.31	39,882.38	61,621.69	28,699.78	1,499.53	3,369.53	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Los Angeles		7,224.79	9,967.65	17,192.44	7,538.36	571.60	1,101.60	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Los Angeles		2,113.00	3,032.26	5,145.26	7,126.47	570.00	1,050.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		9,337.79	12,999.91	22,337.70	14,664.83	1,141.60	2,151.60	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Marysville		9,874.01	20,532.48	30,406.49	13,653.44	1,178.91	2,103.91	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Marysville		3,751.56	8,216.33	11,967.89	18,107.60	1,013.00	2,171.92	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		13,625.57	28,748.81	42,374.38	31,761.04	2,191.91	4,275.83	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00
Sacramento		8,749.57	16,932.86	25,682.43	14,168.04	1,323.22	2,268.22	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Sacramento		3,292.69	6,318.93	9,611.62	16,903.91	1,460.72	2,020.72	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00	1,000.00	1,000.00	2,000.00
Total		12,042.26	23,251.79	35,294.05	31,071.95	2,783.94	4,288.94	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00	2,000.00	2,000.00	4,000.00

States, Territories and land offices.	Fiscal Year 1870.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commut- ed homesteads.				Lands entered under the homestead act, with amount of government fees, and registrars' and receivers' commissions received thereon.				Lands entered under the timber-culture act, with amount of government fees, and registrars' and receivers' commis- sions received thereon.				Aggregate amount disposed of.	Amount. received from all sources.	Incidental ex- penses.
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.			
CALIFORNIA—Cont'd																
San Francisco	1st half.	22,313.10	\$32,904.53	29,447.36	\$1,005	\$2,100.00	\$4,001.00							51,760.46	\$40,905.03	\$3,023.95
San Francisco	2d half.	3,149.28	5,827.98	18,731.88	1,175	1,107.50	2,282.50	40.82	\$10	\$4.00	\$14.00	21,930.28		21,930.28	9,091.58	4,940.00
Total		25,462.38	38,732.51	48,179.24	2,180	3,217.50	6,283.50	49.62	10	4.00	14.00	73,691.44		73,691.44	50,996.61	7,963.95
Shasta	1st half.	8,001.04	9,173.85	7,001.74	515	723.00	1,238.00							11,052.82	16,354.10	2,716.40
Shasta	2d half.	2,787.47	5,585.07	8,238.93	445	518.47	963.47	160.00	10	4.00	14.00	11,240.40		11,240.40	7,352.54	2,679.01
Total		10,788.51	14,758.92	15,240.67	960	1,241.47	2,201.47	160.00	10	4.00	14.00	22,293.22		22,293.22	23,706.64	5,395.41
Stockton	1st half.	5,251.00	9,687.95	0,300.91	305	637.01	1,013.01	160.00	10	4.00	14.00	11,721.87		11,721.87	11,686.96	2,149.81
Stockton	2d half.	5,226.04	9,143.97	9,038.27	530	728.35	1,278.35	488.00	20	12.00	42.00	14,744.31		14,744.31	11,109.33	2,154.50
Total		10,477.04	18,831.92	15,348.18	835	1,365.37	2,291.37	648.00	40	16.00	56.00	26,466.18		26,466.18	22,796.29	4,304.31
Sanaville	1st half.	11,212.77	14,737.60	9,482.42	615	610.13	1,225.18	780.00	50	20.00	70.00	21,516.19		21,516.19	16,022.73	2,282.08
Sanaville	2d half.	8,282.73	6,151.73	11,670.67	745	840.53	1,414.32	3,500.70	240	112.00	352.00	28,544.19		28,544.19	11,180.25	1,630.53

Del Norte	1st half	2,710.58	3,049.48	4,190.40	4,177.00	285	243.00	243.00	485.50	530.00	1,323.00	1,323.00	20.00	20.00	55.00	4,430.00	1,052.49
Del Norte	2d half	2,276.13	3,082.70	4,177.00	4,177.00	285	243.00	243.00	508.00	530.00	1,323.00	1,323.00	40.00	40.00	135.00	4,144.20	1,331.80
Total		4,986.71	6,132.18	8,367.40	8,354.00	570	486.00	486.00	993.50	1,060.00	2,646.00	2,646.00	60.00	60.00	190.00	8,574.20	2,384.29
Denver City	1st half	3,000.20	5,353.24	9,077.20	9,077.20	680	1,000.00	1,000.00	1,000.00	0.400.00	0.400.00	0.400.00	184.00	184.00	560.00	10,173.40	2,532.41
Denver City	2d half	1,980.20	3,072.50	9,416.51	9,416.51	680	923.50	923.50	1,332.50	0.432.51	0.432.51	0.432.51	192.00	192.00	612.00	10,000.22	2,735.42
Total		5,078.40	8,425.74	18,493.71	18,493.71	1,360	1,923.50	1,923.50	2,332.50	0.832.51	0.832.51	0.832.51	376.00	376.00	1,172.00	20,173.62	5,267.83
Fair Play	1st half	3,904.76	5,689.98	1,920.00	1,920.00	120	80.00	80.00	210.00	210.00	210.00	210.00	184.00	184.00	560.00	5,724.76	1,820.26
Fair Play	2d half	6,722.75	11,300.36	3,480.75	3,480.75	230	204.00	204.00	424.00	424.00	424.00	424.00	184.00	184.00	560.00	10,202.56	2,047.20
Total		10,627.51	16,990.34	5,400.75	5,400.75	340	284.00	284.00	634.00	634.00	634.00	634.00	368.00	368.00	1,120.00	15,927.32	3,867.46
Lake City	1st half	1,478.28	2,978.40	80.00	80.00	5	80.00	80.00	11.00	11.00	11.00	11.00	12.00	12.00	42.00	1,478.28	970.50
Lake City	2d half	635.61	1,488.65	80.00	80.00	5	80.00	80.00	11.00	11.00	11.00	11.00	12.00	12.00	42.00	1,195.61	1,801.65
Total		2,114.89	4,467.05	160.00	160.00	10	160.00	160.00	22.00	22.00	22.00	22.00	24.00	24.00	84.00	2,673.89	1,772.15
Pueblo	1st half	2,575.79	5,964.60	14,194.00	14,194.00	915	913.50	913.50	1,828.50	320.00	320.00	320.00	12.00	12.00	42.00	18,080.70	2,231.43
Pueblo	2d half	1,621.11	2,026.39	14,700.98	14,700.98	960	801.00	801.00	1,841.00	254.00	254.00	254.00	12.00	12.00	42.00	18,580.09	2,383.03
Total		5,196.90	7,991.99	28,894.98	28,894.98	1,875	1,714.50	1,714.50	3,669.50	574.00	574.00	574.00	24.00	24.00	84.00	36,660.79	4,614.46
Grand total		20,654.16	49,707.52	65,302.43	65,302.43	4,185	4,765.50	4,765.50	8,030.50	15,942.03	15,942.03	15,942.03	472.00	472.00	1,517.00	110,980.61	27,413.35
DAKOTA.																	
Bismarck	1st half	878.31	2,190.27	1,022.37	1,022.37	65	52.00	52.00	117.00	1,505.23	1,505.23	1,505.23	40.00	40.00	140.00	3,408.91	742.80
Bismarck	2d half	212.34	530.85	3,265.51	3,265.51	300	210.00	210.00	410.00	6,071.49	6,071.49	6,071.49	132.00	132.00	532.00	2,490.34	2,596.53
Total		1,090.65	2,721.12	4,287.88	4,287.88	365	262.00	262.00	527.00	7,576.72	7,576.72	7,576.72	172.00	172.00	672.00	5,900.25	1,079.08
Deadwood	1st half	1,597.68	1,278.40	5,153.60	5,153.60	325	130.00	130.00	455.00	440.00	440.00	440.00	16.00	16.00	46.00	1,527.68	1,172.07
Deadwood	2d half	122.08	531.33	5,153.60	5,153.60	325	130.00	130.00	455.00	440.00	440.00	440.00	16.00	16.00	46.00	5,715.77	1,300.70
Total		1,719.76	1,809.73	10,307.20	10,307.20	650	260.00	260.00	910.00	880.00	880.00	880.00	32.00	32.00	92.00	7,243.45	2,472.77
Fargo	1st half	12,119.85	25,465.87	73,468.53	73,468.53	4,710	2,779.22	2,779.22	7,439.22	87,385.96	87,385.96	87,385.96	2,243.00	2,243.00	7,833.00	172,974.24	3,235.90
Fargo	2d half	7,945.14	10,880.47	221,704.95	221,704.95	13,820	7,700.10	7,700.10	21,520.10	150,336.71	150,336.71	150,336.71	4,028.00	4,028.00	14,038.00	338,045.80	3,578.73
Total		20,064.99	36,346.34	295,173.48	295,173.48	18,530	10,479.32	10,479.32	28,959.32	237,722.67	237,722.67	237,722.67	6,271.00	6,271.00	21,871.00	511,020.04	6,814.63
Sioux Falls	1st half	10,885.45	20,430.68	87,021.40	87,021.40	5,900	3,574.11	3,574.11	8,504.11	46,140.28	46,140.28	46,140.28	1,212.00	1,212.00	4,172.00	157,065.13	3,009.00
Sioux Falls	2d half	6,801.76	15,440.17	164,041.72	164,041.72	10,310	5,583.18	5,583.18	14,100.18	69,028.76	69,028.76	69,028.76	1,588.00	1,588.00	5,773.00	226,103.24	3,331.00
Total		20,187.21	35,870.85	251,063.12	251,063.12	16,210	9,157.29	9,157.29	22,604.29	115,169.04	115,169.04	115,169.04	2,800.00	2,800.00	9,945.00	383,168.37	6,340.00

States, Territories, and land offices.	Fiscal year 1879.	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commut- ed homesteads.		Lands entered under the homestead act, with amount of government fees, and registrars' and receivers' commissions received thereon.				Lands entered under the timber-culture act, with amount of government fees, and registrars' and receivers' commis- sions received thereon.				Aggregate of acres disposed of.	Aggregate amount received from all sources.	Incidental ex- penses.
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	Amount.
Dakota—Cont'd.	1st half.	4,477.81	\$5,997.40	36,847.88	\$2,320.	\$1,075.00	\$3,395.00	44,352.78	\$2,780.	\$1,132.00	\$3,922.00	85,678.57	\$12,939.46	\$2,247.08
	2d half.	3,613.09	5,809.78	87,117.95	5,460.	2,349.00	7,800.00	121,373.51	7,590.	3,056.00	10,646.00	212,104.55	25,933.03	4,189.84
	Total.	8,091.00	11,807.24	123,965.83	7,780.	3,415.00	11,195.00	165,726.29	10,380.	4,188.00	14,568.00	297,783.12	38,872.49	6,437.50
	Yankton.	4,058.06	6,864.44	64,281.94	4,050.	1,887.51	5,937.51	87,185.00	5,505.	2,228.00	7,733.00	155,523.00	20,970.05	3,000.00
	Yankton.	2,887.00	4,753.77	113,849.71	7,160.	3,420.41	10,580.41	118,183.01	7,470.	3,032.00	10,502.00	236,064.72	26,979.18	3,226.05
Total.		6,943.00	11,623.21	178,131.65	11,210.	5,307.92	16,517.92	206,353.01	12,975.	5,260.00	18,235.00	391,587.72	47,950.13	6,226.05
Grand total.		58,027.68	111,686.07	867,775.05	54,350.	29,051.53	83,401.53	731,687.73	46,203.	18,732.00	64,937.00	1,037,811.06	273,714.25	30,020.53
FLORIDA.														
Gainesville.	1st half.	613.80	2,480.23	30,534.08	2,135.	1,177.30	3,312.30							
	2d half.	2,571.00	5,620.32	26,964.50	1,835.	1,075.90	2,910.90							
Grand total.		3,184.80	8,100.55	57,500.58	3,970.	2,253.20	6,223.20							
IDAHO.														
Boise City.	1st half.	5,105.69	3,141.50	16,312.80	1,045.	715.50	1,760.50	2,580.34	185.	92.00	277.00	23,079.83	5,807.50	1,433.83
	2d half.	1,962.73	1,551.25	8,215.97	530.	419.50	940.50	2,115.34	150.	68.00	218.00	12,314.04	3,201.34	1,628.18
Total.		7,068.42	4,692.75	24,528.77	1,575.	1,135.00	2,701.00	4,695.68	335.	160.00	495.00	35,393.87	9,008.84	3,061.90
Lowiston.	1st half.	5,187.29	7,835.53	14,479.77	965.	623.50	1,588.50	8,717.76	500.	232.00	792.00	28,384.84	11,032.07	2,773.28

No. 2.—Statement of public lands sold for cash and entered under the homestead and timber-culture acts, &c.—Continued.

States, Territories, and land offices.	Fiscal year 1892	Sales of land for cash, and amount re- ceived therefor, including cash re- ceived on commut- ed homesteads.		Lands entered under the homestead acts, with amount of government fees, and registrars' and receivers' commissions received thereon.				Lands entered under the timber-culture acts, with amount of government fees, and registrars' and receivers' commis- sions received thereon.				Aggregate of acres disposed of.		Aggregate amount received from all sources.		Incidental ex- penses.
		Acres.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Fees.	Commis- sions.	Amount.	Acres.	Amount.	Amount.	Amount.	
MINNESOTA—Gen'l.	1st half.	2,748.37	\$5,520.86	36,381.15	\$2,340	\$2,170.17	\$4,510.17	17,892.65	\$1,160	\$490.00	\$1,840.00	57,020.07	\$12,283.70	\$3,010.00		
	2d half.	512.52	1,538.86	82,383.25	4,600	3,583.32	8,183.32	12,708.10	840	372.00	1,212.00	96,601.92	11,915.18	8,214.75		
	Total.	3,258.89	7,058.72	118,764.40	6,940	5,753.49	12,693.49	30,598.71	2,000	852.00	2,832.00	152,622.00	24,298.88	6,234.75		
New Ulm.	1st half.	4,467.30	11,155.69	84,240.28	2,195	2,403.86	4,508.86	14,024.83	1,035	480.00	1,515.00	53,032.50	17,604.55	8,000.00		
	2d half.	1,538.82	4,170.94	33,755.89	1,020	1,787.75	3,707.75	12,810.60	800	350.00	1,156.00	47,625.31	9,488.09	2,358.75		
	Total.	6,006.12	15,326.63	117,996.17	3,215	4,191.61	8,206.61	27,235.43	1,835	830.00	2,671.00	101,257.81	27,092.64	5,358.75		
Redwood Falls.	1st half.	4,214.75	9,253.16	26,683.77	1,720	1,844.29	3,584.29	11,767.72	840	412.00	1,252.00	42,846.24	14,353.39	3,070.95		
	2d half.	712.50	2,078.40	36,445.21	2,000	1,728.21	3,728.21	9,501.25	625	304.00	929.00	46,050.06	7,162.67	3,110.70		
	Total.	4,927.25	11,331.56	63,128.98	3,720	3,572.50	7,292.50	21,268.97	1,465	716.00	2,181.00	88,905.30	21,506.06	6,181.65		
Saint Cloud.	1st half.	1,003.83	3,169.62	20,090.35	1,300	1,535.77	2,835.77							2,523.14		
	2d half.	705.83	1,672.90	33,956.88	2,005	1,731.16	3,826.16							6,439.70		
	Total.	2,432.06	4,842.52	54,047.23	3,305	3,266.93	6,711.93							8,874.84		
Taylor's Falls.	1st half.	2,832.72	5,406.70	2,478.10	165	298.29	463.29							5,803.49		
	2d half.	1,874.22	2,497.78	28,307.41	1,865	1,534.42	3,489.42							6,069.71		
	Total.	4,206.94	7,904.48	30,875.51	2,120	1,832.71	8,952.71							11,873.20		
Worthington.	1st half.	3,068.68	9,018.77	21,058.71	1,365	2,067.41	3,432.41	21,684.81	1,600	668.00	2,268.00	47,011.70	15,838.98	3,098.25		
	2d half.	1,010.17	2,805.51	17,284.90	1,000	1,260.64	2,563.54	10,899.26	1,100	548.00	1,648.00	34,004.33	7,915.03	8,000.00		
	Total.	4,078.85	11,824.28	38,343.61	2,365	3,328.05	6,035.95	32,584.07	2,700	1,216.00	3,916.00	81,016.03	23,753.96	11,098.25		

Enreko.	1st half	8,110.61	3,273.75	400.00	43.00	95.00	100.00	100.00	10	4.00	14.00	43,400.94	20,703.43	5,210.37
Eureka.	2d half.	6,405.41	3,294.00	3,437.31	230	147.00	367.00	1,600.24	119	48.00	153.00	5,534.35	1,537.94	507.23
Total		11,516.02	6,567.75	4,237.31	270	102.00	462.00	1,731.92	115	52.00	167.00	7,796.05	2,176.94	1,290.10
Grand total.		22,899.12	17,244.82	10,350.82	665	703.50	1,369.50	1,891.93	125	56.00	181.00	37,338.31	24,610.03	4,890.53
NEW MEXICO.														
La Moallia.	1st half.	1,319.01	462.00	920.00	65	45.00	119.00	41.69	5	4.00	9.00	2,271.70	641.00	692.93
La Moallia.	2d half.	1,274.11	979.44	2,560.00	165	166.50	331.50	1,600.24	119	48.00	153.00	5,534.35	1,537.94	507.23
Total		2,593.12	1,441.44	3,480.00	230	211.50	441.50	1,731.92	115	52.00	167.00	7,796.05	2,176.94	1,290.10
Santa Fe.	1st half.	8,903.19	7,492.50	3,914.95	245	158.00	443.00	1,600.00	10	4.00	14.00	12,818.14	8,102.50	1,801.27
Santa Fe.	2d half.	11,146.23	12,970.25	5,263.87	335	210.00	534.00	1,600.00	10	4.00	14.00	10,734.12	14,276.25	1,729.10
Total		20,049.42	20,462.75	9,178.82	580	377.00	977.00	1,600.00	20	4.00	14.00	29,542.26	22,440.75	3,090.37
Grand total.		22,027.56	21,910.10	12,658.62	810	588.50	1,398.50	1,891.93	125	56.00	181.00	37,338.31	24,610.03	4,890.53
OHIO.														
Ohio.	1st half.	123.15												
Ohio.	2d half.	123.15												
Grand total.		123.15												
OREGON.														
La Grande.	1st half.	5,573.62	7,987.34	6,135.55	405	487.83	892.83	3,638.28	235	100.00	335.00	15,367.45	9,495.17	1,422.77
La Grande.	2d half.	2,160.02	8,541.50	7,362.94	470	530.72	1,009.72	7,003.03	440	180.00	629.00	18,527.99	5,808.72	2,624.91
Total		7,733.64	11,228.84	13,518.49	875	1,027.55	1,902.55	10,641.31	675	280.00	964.00	31,895.44	15,361.89	4,047.68
Lake View.	1st half.	1,411.56	1,844.47	1,506.83	100	71.89	171.89					3,008.39	2,392.10	1,200.73
Lake View.	2d half.	5,032.90	2,505.38	4,092.86	200	180.13	413.13	853.57	55	24.00	79.00	9,999.36	5,460.87	1,381.84
Total		6,444.46	4,349.85	5,600.69	300	256.02	615.02	853.57	55	24.00	79.00	13,007.75	7,852.97	2,582.57
Oregon City.	1st half.	842.49	2,408.45	11,123.38	760	1,051.28	1,811.28					11,903.87	5,545.70	2,957.36
Oregon City.	2d half.	490.83	972.08	6,444.60	415	621.56	1,036.56					6,931.62	2,471.15	2,530.00
Total		1,333.32	3,380.53	17,567.97	1,175	1,672.84	2,847.84					18,835.49	8,216.85	5,507.36
Roseburg.	1st half.	8,039.04	8,944.04	13,540.87	800	1,054.78	1,944.78					18,835.49	11,471.77	2,890.56
Roseburg.	2d half.	3,807.94	6,008.82	11,613.76	500	674.24	1,264.24					15,421.70	7,404.05	1,813.58
Total		9,846.98	14,612.86	25,154.63	1,300	1,729.02	3,209.02					35,610.61	18,875.82	4,704.14

REPORT OF THE SECRETARY OF THE INTERIOR.

8

Walla Walla	1st half	8,440.10	16,051.22	12,758.25	856	990.50	1,854.50	7,398.78	485	224.00	709.00	28,798.14	21,308.72	1,071.59
Walla Walla	2d half	9,084.68	16,078.06	10,872.87	1,220	1,407.00	2,027.00	3,414.80	800	372.00	1,282.00	42,372.37	21,820.06	2,301.85
Total		17,524.78	32,129.28	23,631.12	2,076	2,406.50	4,481.50	20,814.58	1,345	600.00	1,941.00	71,168.51	43,128.82	5,000.44
Grand total		30,834.54	60,768.47	44,503.99	8,440	10,197.20	18,037.20	66,800.82	4,800	1,880.00	6,160.00	245,310.15	101,510.07	22,331.63
WISCONSIN.														
Bayfield	1st half	1,830.75	2,060.23	2,434.05	215	167.70	382.70	.....	.....	.....	.....	4,773.80	3,408.93	803.03
Bayfield	2d half	3,239.24	5,946.16	2,584.45	125	80.00	221.00	.....	.....	.....	.....	5,823.69	0,307.18	1,113.62
Total		4,578.99	8,006.41	5,018.50	340	263.70	603.70	.....	.....	.....	.....	10,597.49	3,716.11	1,916.65
Eau Claire	1st half	1,084.47	1,925.04	13,100.02	910	890.58	1,800.58	.....	.....	.....	.....	14,254.39	3,875.12	1,901.92
Eau Claire	2d half	998.26	1,305.35	11,771.10	685	694.05	1,379.05	.....	.....	.....	.....	12,767.38	3,010.88	1,458.48
Total		2,080.73	3,230.37	24,841.02	1,595	1,584.63	3,179.63	.....	.....	.....	.....	27,021.75	6,886.00	3,360.40
Falls of Saint Croix	1st half	435.26	1,020.46	6,928.75	500	643.13	1,148.13	.....	.....	.....	.....	7,304.01	2,470.59	1,139.14
Falls of Saint Croix	2d half	460.93	1,210.12	7,892.89	540	481.00	1,021.00	.....	.....	.....	.....	8,360.82	2,473.12	1,713.98
Total		915.19	2,230.58	14,821.64	1,040	1,129.13	2,169.13	.....	.....	.....	.....	15,753.83	4,943.71	2,853.12
La Crosse	1st half	583.41	504.51	8,084.36	505	305.87	900.87	.....	.....	.....	.....	7,267.77	1,830.23	972.00
La Crosse	2d half	619.61	1,439.03	6,352.21	410	619.86	1,029.86	.....	.....	.....	.....	7,171.82	2,622.81	1,275.32
Total		1,403.02	2,243.54	13,076.57	915	1,015.75	1,930.75	.....	.....	.....	.....	14,439.59	4,453.04	2,248.32
Menasha	1st half	1,337.83	1,807.33	15,891.29	1,095	478.71	1,573.71	.....	.....	.....	.....	17,249.12	3,763.04	1,398.81
Menasha	2d half	3,904.76	4,980.85	14,453.58	975	407.61	1,382.61	.....	.....	.....	.....	18,361.34	6,708.09	1,418.43
Total		5,242.59	6,788.18	30,344.87	2,070	886.32	2,956.32	.....	.....	.....	.....	35,610.46	10,471.13	2,817.24
Wausau	1st half	481.73	843.06	14,230.43	1,020	603.28	1,683.28	.....	.....	.....	.....	14,721.10	2,810.77	1,404.56
Wausau	2d half	582.40	784.02	12,608.85	860	612.04	1,472.04	.....	.....	.....	.....	13,191.14	2,590.40	1,482.53
Total		1,064.13	1,627.08	26,839.28	1,880	1,215.30	3,155.30	.....	.....	.....	.....	27,912.24	5,401.17	2,887.09
Grand total		15,314.74	25,146.16	116,020.68	7,840	6,154.83	13,994.83	.....	.....	.....	.....	131,335.42	42,037.19	16,142.62
WYOMING.														
Cheyenne City	1st half	8,783.13	3,515.51	1,000.05	115	105.00	220.00	.....	.....	.....	.....	10,473.18	3,810.51	735.23
Cheyenne City	2d half	10,288.20	3,363.00	2,799.42	180	138.00	318.00	.....	.....	.....	.....	13,087.60	3,740.00	774.94
Total		19,071.33	6,878.51	4,480.47	295	243.00	538.00	.....	.....	.....	.....	23,560.78	7,550.51	1,510.17

RECAPITULATION.

States and Territories.	1		2				3				4	5	6
	Acres.	Amount.	Acres.	Fees.	Commissions.	Total.	Acres.	Fees.	Commissions.	Total.	Acres.	Amount.	Incidental expenses.
Sales of land for cash, and amount received therefor, including cash received on commuted homesteads.													
Alabama	4,610.10	\$7,000.67	158,102.59	\$10,950	\$6,875.75	\$17,725.75	3,280.00	\$205	\$84.00	\$289.00	102,772.00	\$14,075.72	
Arizona Ter.	19,861.53	1,060.11	5,050.97	355	272.50	627.90					28,201.50	3,411.31	
Arkansas	5,612.30	8,614.92	202,343.70	14,310	8,505.40	22,905.40	15,612.81	1,920	458.00	1,470.00	208,855.96	10,844.08	
California	141,287.01	210,425.22	223,014.29	14,203	16,090.03	30,283.03	15,962.60	1,945	473.00	1,517.00	379,921.01	48,242.14	
Colorado	20,050.10	40,707.62	65,302.42	4,185	4,765.50	8,950.50	731,667.73	48,305	18,782.00	64,937.00	110,960.61	21,413.35	
Dakota Ter.	58,027.48	111,086.67	967,775.05	54,350	20,051.53	83,401.53					1,657,811.06	30,020.53	
Florida	3,184.89	8,119.55	67,500.58	3,070	3,253.20	6,323.20	22,634.68	1,495	644.00	2,139.00	60,845.47	7,037.90	
Idaho Ter.	15,982.51	17,379.88	52,772.47	3,435	3,370.80	5,814.80	6,577.25	500	332.00	832.00	91,508.65	9,976.25	
Iowa	1,850.13	2,571.22	3,173.31	250	2,541.80	2,791.80					11,000.00	6,706.82	
Illinois		140.85										5.32	
Kansas	30,325.06	74,938.41	1,569,252.61	96,540	64,506.04	103,136.64	1,115,659.12	73,206	30,647.00	103,853.00	2,764,528.39	47,617.28	
Louisiana	872.82	1,060.02	58,651.80	1,900	1,854.37	3,754.37	80.43	5	4.00	9.00	27,464.07	5,854.48	
Michigan	7,680.00	14,331.50	167,049.23	10,630	7,285.00	17,915.00					163,630.13	12,732.80	
Minnesota	40,075.10	93,978.14	638,100.88	38,319	34,174.00	72,493.00	257,652.60	10,234	8,147.00	24,381.00	975,784.48	45,537.19	
Mississippi	1,896.90	2,711.17	10,318.52	1,457	1,455.00	2,912.00					21,237.42	4,722.86	
Missouri	1,437.12	2,111.92	39,425.27	2,825	2,859.77	5,684.77					40,862.39	7,028.37	
Montana Ter.	44,628.74	23,579.63	16,003.43	1,175	1,467.00	2,642.00	3,134.20	216	108.00	323.00	66,154.37	6,748.00	
Nebraska	11,881.42	22,470.76	703,861.35	43,840	34,002.23	77,842.23	405,908.01	20,940	12,724.00	42,664.00	1,181,661.08	41,247.27	
Nevada	32,809.12	17,244.93	10,850.83	665	703.50	1,368.50	100.00	10	4.00	14.00	43,409.94	5,210.37	
New Mexico Ter.	21,627.56	21,010.10	12,613.82	610	588.50	1,396.50	1,691.93	125	56.00	181.00	37,338.31	4,380.53	
Ohio		122.16										122.16	
Oregon	20,144.34	42,120.83	74,251.05	4,949	5,420.88	9,960.88	17,046.50	1,100	414.00	1,514.00	120,442.68	21,690.28	
Utah Ter.	20,202.16	72,683.77	71,685.50	4,435	3,528.00	7,963.00	2,328.03	188	80.00	240.00	103,307.68	7,245.10	
Washington Ter.	36,804.54	69,763.47	141,464.70	8,440	10,197.20	18,637.20	66,590.82	4,306	1,800.00	6,100.00	245,910.15	22,451.63	
Wisconsin	15,314.74	24,146.16	110,020.63	7,840	6,154.83	12,994.83					131,335.42	16,142.63	
Wyoming Ter.	28,441.17	8,099.06	4,600.47	320	307.00	587.00					33,330.04	2,600.97	
Grand total..	622,573.90	804,840.89	5,260,111.20	31,341	247,170.92	578,704.02	2,706,578.93	175,766	74,764.00	250,530.00	8,650,210.18	1,875,155.86	400,884.50

Note.—Column No. 4 includes \$90.00 acres located with agricultural college strip.

and intelligence everywhere indicate the rapid progress we are making as a nation. In no portion of the country, however, does the evidence of returning prosperity appear to be so positive or the movement of population so extensive as in the States of Kansas, Nebraska, Colorado, and Oregon. In many parts of those States towns have grown up with a rapidity almost without parallel—considerable settlements of a few weeks' age being no uncommon phenomena—and the growth is of such a character as to insure permanent improvement to the business both of the railroads and the country adjacent; they are not the movable towns which exist upon railroad construction. To a certain extent these rising towns are the result of an energetic and liberal effort on the part of railroad companies to obtain more business, and show what is possible when harmonious relations are established between the railroads and the people. Liberal views of each other's obligations and a spirit of forbearance and concession on both sides must tend to mutual advantage. The railroad is the great civilizer of modern times.

In the revival of commerce, industry, and production now in progress, no single element composing or aiding it has been so marked as the impetus given to railroad construction and extension and the increase of freight traffic, carrying with it increased activity in all related industries. This is due, perhaps, not alone to the resumption of specie payments, but to a combination of circumstances.

A restrictive and perhaps too rigid economy in railroad management, operating through several years, but more especially since 1873, has given cheaper and better service; but in many cases—more so in the West than in the East—at the expense of future renewals, which, with a due regard to the safety of travel and the ultimate value of the properties themselves, could now no longer be postponed; hence the rolling-mills, foundries, and machine-shops East and West are tested to their utmost capacity in filling orders for rails, equipment, machinery, and other railroad supplies, causing a large advance in prices.

A more equitable and more practical view of the obligations existing between railroad companies as competitors for traffic, as well as of those existing between the railroad companies and their customers, has led to a certain steadiness of rates, the maintenance of which cannot but prove advantageous alike to producer, merchant, and carrier, making business more profitable and profits more certain.

The abundant and yearly increasing harvests, especially of the grain-growing States of the West, accompanied by a demand for the surplus at good prices, together with the rich development of the mineral wealth of the same section, have undoubtedly been prime factors in this great improvement in business.

These and other causes, aiding or aided by a returning confidence in the stability of values, assured as that is by the accomplished fact of resumption of specie payments, working together, constitute in a large degree the basis of the better railroad business, as well as of the "better times" of the country at large.

Nowhere have these facts and results been so apparent as in the country lying between the Mississippi River and the Rocky Mountains, along the lines of railroad traversing that section, and further west. As exhibited more in detail in Appendix M of this report, the statistics of operation of certain railroads show the increase of railroad construction, business, and profit, during the year 1878, to be largely in favor of those west of the Mississippi, and there is every reason to believe that the present year will show results still more surprising. The following summary affords some idea of the improvement which has taken place in railroad business generally, especially in freight traffic. It will also be observed

From this exhibit of the business of the Atchison, Topeka and Santa Fé Railroad Company it appears, by comparing results for 1878 with the average of the previous five years, that the number of passengers has *increased* 65 per cent., mileage of passengers has *increased* 100 per cent., earnings from passengers have *increased* 50 per cent., passenger rates have *decreased* nearly 30 per cent., number of tons of freight carried has *increased* 80 per cent., ton mileage has *increased* 120 per cent., freight earnings have *increased* 70 per cent., freight rates have *decreased* 25 per cent.; it also appears that "gross earnings" have more than kept pace with "expenses"; the former having *increased* 65 per cent., while the latter have *increased* but 60 per cent., and that "net earnings" have *increased* nearly 70 per cent.

As a still further illustration of the progress of railroad construction in the West, it may be stated approximately that for the ten months ending October 31 in each year there has been built of new railroad as follows:

	Miles.
Ten months in 1879.....	2,900
1878.....	1,700
1877.....	1,800
1876.....	1,900
1875.....	1,100
1874.....	1,500

and that of the 2,900 miles constructed in the first ten months of 1879 over 2,000 miles are west of the Mississippi. The increase of railroad mileage in the whole country since 1873 may be approximately divided as follows, viz:

Miles built.	East of Mississippi River.	West of Mississippi River.	Total.
To October 31, 1879.....	4	0	85,000
To December 31, 1873.....	1	0	70,500
Increase in five years and ten months.....		0	14,500
Percentage of increase.....	14.28	36.88	20.56

NECESSITY FOR THE BUREAU.

In the Report of this bureau for the year 1878, pages 5 to 13, inclusive, some remarks were made relative to the causes which led to its establishment.

panies, it is due to Mr. Henry V. Poor that the greatly improved character of his "Manual of the Railroads of the United States for 1879," over those of former years, be mentioned, and the valuable aid it has been to this office acknowledged.

Speaking of railroad reports generally, Mr. P. makes the following remark in his preface:

"While, as a rule, the railroad companies very readily furnish the information required, there are still a considerable number which either refuse it altogether, or supply it sparingly and grudgingly. Where the information given by us does not come up to the general standard we have adopted, it is to be remembered that the fault is not our own. Where the statements of the companies are not satisfactory, those interested would confer a great favor, both upon ourselves and the public, by joining with us in a demand for more satisfactory ones. The refusal of information should, as a rule, be taken as evidence that, if communicated, it would tell strongly against the company or persons refusing it."

Since then it has been found, upon examination into the actual condition of the accounts between the Pacific Railroad Companies and the government, that in order to have them correctly settled, and readjusted in accordance with the decisions of the Supreme Court, considerable work and time will be required on the part of the companies, the accounting-officers, and this bureau.

The accounts for transportation, many of which will require this resettlement and readjustment, go back to the very beginning of the service performed for the government, and involve an amount of more than \$18,000,000 of compensation.

The causes for this condition of the accounts are manifold and complex. Until the present year, by the decision of the Supreme Court of the United States in what are known as the "Five per cent. cases," there had been no authoritative interpretation of the law as to what service the companies were entitled to payment for in full or otherwise. If, in any year, there was not enough money in an appropriation to enable other accounts for transportation to be settled and paid as well as the accounts of the Pacific Railroad Companies, the latter were left unsettled and suspended. In many settlements made by the accounting-officers differences or disallowances have been found, and the companies either not having been notified or not having received the notification of the same, the United States remains charged with the original amount on their books. Where services have been rendered by the companies, part on subsidized and part on unsubsidized railroad, the whole amount of compensation, in numerous instances, has been covered into the Treasury, irrespective of such difference. Considerable passenger travel by government officers and employes on these railroads, from year to year, has been paid for in money by the purchase of through tickets at the East, and the proportion which these companies have received has, in many cases, been charged to them by the accounting-officers—necessitating collection of the same or restatement of the account upon final settlement with each company—while in other cases the accounts have been passed without charges being made against the companies, and the law of 1873 rendered void to that extent. The compensation for mail service on the Central Pacific Railroad from Ogden to San Francisco since July 1, 1878, having been disposed of by covering one-half to the credit of interest paid by the United States and the other half to the credit of the sinking fund established by the act of May 7, 1878, and the *subsidized* mileage of that route being 798.80, while the total mileage is 894.64, a redisposal or resettlement of the amount due the company for such service will be required; and so long as the same practice continues the work of correction must accumulate. From a report made to this office by the Sioux City and Pacific Railroad Company, it appears that that company *has been paid in full* for the transportation of the mails to December 31, 1872, as well as for some other service performed by it, in all to the amount of \$30,162.58, notwithstanding the fact that the act of Congress approved July 2, 1864, section 5 (13 U. S. Statutes, 359), required that "one-half of the compensation for services rendered for the government by said companies shall be * * * applied to the payment of the bonds issued by the government in aid of the construction of said roads."

These and other facts which might be enumerated show the necessity of some supervision in regard to the settlement of these accounts by the accounting officers, more so now than before, owing to the complications of law and decisions relating to the companies. The accounts for services performed by the Pacific Railroad Companies might be referred by

the several accounting officers to this office, or, perhaps better, to the First Auditor of the Treasury, for revision, record, and report, before issue of the requisition for payment, so that the Secretary of the Treasury could be informed as to the disposal of the same according to law.

In the event of the latter plan being adopted, it might be advisable to have all the accounts rendered by the companies forwarded through this office to the accounting officers.

In this or some similar way only can the interests of the government be protected or a consolidated account of the services of these companies be kept. The several Auditors of the Treasury being entirely independent of each other, no one is authorized by law to consolidate these accounts. The recommendation for legislation in this respect is made in another part of the report.

THE RAILROAD COMPANIES INCLUDED IN THE ACT.

The names of the companies which now own or operate the subsidized and land-grant railroads located within the limits fixed in the act of Congress approved June 19, 1878, are given in Appendix A, together with the names of the companies which obtained the subsidy or land-

ion of these companies has been made, viz:
 which bonds have been loaned, and to which
 ay, depot grounds, and materials from adja-
 tates have been made, consisting of the Union
 ; Central Pacific Railroad Company (includ-
 which company was consolidated with the
 70); Kansas Pacific Railway Company; Cen-
 Railroad Company, and the Sioux City and

which bonds have not been loaned, but to
 essors, grants of lands, right of way, depot
 a adjacent lands of the United States have been
 ington and Missouri River Railroad Company
 c Railway and Telegraph Company, Texas and
 Southern Pacific Railroad Company, Northern
 Atlantic and Pacific Railroad Company, Saint
 Railway Company (successor to a portion of
 nd Pacific Railroad Company), California and
 y (consolidated with the Central Pacific Au-
 l California Railroad Company, and the Ore-
 .pany.

ers or operators of railroads, to aid in the con-
 right of way, depot grounds, and materials
 United States to the States in which the re-
 cated, consisting of the Hannibal and Saint
 ; Missouri Pacific Railroad Company; Saint
 Southern Railway Company; Little Rock and
 any; Memphis and Little Rock Railroad Com-
 nd Texas Railway Company; Atchison, Topeka
 mpany; Kansas City, Lawrence, and Southern
 Joseph and Western Railroad Company; Chi-
 ney Railroad Company; Chicago, Rock Island
 pany; Cedar Rapids and Missouri River Rail-
 and Sioux City Railroad Company; Iowa Falls
 Company; Saint Paul and Sioux City Railroad

chief reason for this is, that unless reports of railroad companies are uniform as to time and facts they are almost valueless for publication or comparison.

In addition to the semi-annual report referred to, a monthly statement is required from all of the companies, giving *earnings* (under five principal heads), *expenses* (under the ordinary five items of classification), and *miles operated* for the current and previous year. This statement will afford some idea of the business and profits as they progress from month to month; and when a sufficient number of the companies which are required to report to this office have decided to forward these simple monthly statements promptly, a monthly circular giving the information will be published for general use.

From the Pacific Railroad Companies, those to which subsidy bonds have been loaned, a monthly report on Form No. 1, showing the condition of every account on the general ledger, is required, as at first.

It is believed that the forms adopted as above referred to conform to the conditions which were decided upon when first the bureau went in operation, and which are still considered the only correct principles which should govern in this matter, viz: (1) *That the reports should be practical and simple, stating facts*; (2) *that the number and frequency of reports should be reasonable*; and (3) *that the matters reported should be useful and necessary both to stockholder and creditor*. It is expected, as a matter of course, that every company will have its books kept on the simple principles of true and honest bookkeeping, by having every transaction as it occurs entered with its proper debit and credit, whether be a liability or mere receipt or expenditure of money.

This being so, there is no reason for any particular form of bookkeeping to be imposed upon railroad companies.

LAWS RELATING TO THE PACIFIC RAILROAD COMPANIES.

A full and correct compendium of the laws of the United States relating to the Pacific Railroad Companies, those subsidized by money lands under the act of Congress approved July 1, 1862, and the amendments thereof, has long been needed for reference and use in all of the departments of the government.

Many officers and employes of the government, in ignorance of the laws, especially the prohibitory sections now in force, have often paid full fares in cash on these railroads, complicating the settlement of the disbursing officers' accounts; and in other cases the disbursement has been passed and the government received nothing to credit of interest paid.

In the adjustment of the accounts of these companies at this particular time a full knowledge of these laws is absolutely necessary to a correct and legal settlement.

For these reasons, among others, the compendium referred to has been made part of this report, as Appendix C.

Among the laws relating to these railroads which were passed during the fiscal year ending June 30, 1879, was one (20 United States Statutes, 42) by which the Secretary of the Treasury was authorized "to make such entries upon the books of the department as will carry to the credit of said companies the amounts so earned or to be earned by them during each fiscal year," &c. This law was passed simply and wholly for the purpose of enabling the accounting officers to go on and settle the accounts which had for years been suspended for lack of appropriation, and have them stated on their books now, when the facts are better known and the accounts themselves more readily and easily examined.

Third. The suits of the Union Pacific *vs.* United States and Central Pacific *vs.* Albert Gallatin, brought to test the constitutionality of the act of Congress approved May 7, 1878, known as the sinking-fund law in which the claim of the government was sustained by the Court.

While the decision in the sinking-fund cases is, in its bearing upon the relations of the government to these railroad companies, present and prospective, of the highest importance, in its assertion of the fundamental principle of good government, which prevents the creature from usurping or defying the power of its creator—the sovereignty of the people or nation—its effect must be felt for centuries to come in the history of this country. As is well said by Judge Sanderson, the learned counsel of the Central Pacific Company, in an argument against the power of the legislature of California to regulate fares and freights on the Central Pacific Railroad, and affirming the proposition that “Congress has ‘established’ the Central Pacific Railroad as a national highway for postal, military, and commercial purposes”—“The seventeenth section provides that if said company shall fail to comply with the terms and conditions of the act, or to keep the road in repair and use for an unreasonable time, ‘Congress may pass any act to insure the speedy completion of said road and branches, or put the same in repair and use, and may direct the income of said railroad and telegraph line to be thereafter devoted to the use of the United States,’ &c.; and, further, “that if said roads are not completed ‘so as to form a continuous line from the Missouri River to the navigable waters of the Sacramento River by the 1st day of July, 1876, said roads, with all their rolling-stock, fixtures, &c., shall be forfeited to and taken possession of by the United States’—all being power which the sovereign only can exercise. A still further and perhaps more conclusive demonstration of the alleged intent of Congress to exercise complete legislative power over the road, for all the purposes for which its construction was undertaken, is found in the eighteenth section, which deals with the question of fares and the power of Congress to *add to, alter, amend, or repeal the act.* It provides that when the net earnings of the road and telegraph shall have reached a certain per centum upon their cost, ‘Congress may reduce the rates of fare thereon if unreasonable in amount, and may fix and establish the same by law. And the better to accomplish the object of this act, namely, to promote the public interest and welfare by the construction of said road and telegraph line, and keeping the same in working order, and to secure to the government at all time (but particularly in time of war) the use and benefits of the same for postal, military, and other purposes, Congress may at any time, having due regard for the rights of said companies named herein, *add to, alter, amend, or repeal this act.*’”

tion, the company is required to make annual reports as mentioned to the Secretary of the Treasury, for the obvious general government to supervise and control the road and otherwise (12 U. S. Stat. at Large, 489).

n to fares has a controlling effect upon the question in hand is incident to sovereignty. Where the latter does not exist can the doctrine of concurrent jurisdiction upon the subject be maintained if advanced. The clause that Congress may regulate the road shall have reached a certain percentage upon the road is a denial of the right to interfere before that time of local or State government; and the clause in relation to uniform right on the part of State governments to interfere at all is not to be admitted, the right to adopt any rate they might.

They might, therefore, adopt rates not uniform, and such with the declared purpose of Congress, shows that Congress on the subject as to render repugnant all State legislation in any cause, uniformity of rule is demanded, the right to de-

with the subject at all, is vested exclusively in the general government. The nature of the subject, as well as the express will of Congress, all State interference is prohibited.

Again:

The forfeitures provided for in the act, the right in a certain event to tax the corporation and devote the entire income to the use of the United States, and the right to fix and establish the rates of fare and make them uniform throughout the States and Territories, are acts of exclusive sovereignty, which as clearly indicate the intent to withdraw the subject matter from State jurisdiction as a direct consequence to that effect would have done. The powers assumed are strictly sovereign in character, and their exercise by the Federal Government is incompatible with the exercise by the States, for sovereign power over the same subject matter cannot exist in two bodies at the same time.

Again, referring to the act of the State of California, passed in 1864, he says:

The object of this statute, as declared both in the title and the purpose of the act, was "to enable the said company more fully and completely to carry out and perform the provisions and conditions of the said act of Congress." To the company, among other things, was vested with the power of eminent domain within the State. Now, as a local or State corporation, the company already possessed such power under the general railroad laws of the State, and this further grant is inconceivable under every rational hypothesis except that the legislature realized and fully understood the effect of the act of Congress had vested, or, which amounts to the same thing, had authorized the company to vest the company with the character and powers of a national corporation. In the latter character it was to act in the future, and might in that character be called upon to exercise the power in question. The repeal of all laws and parts of laws inconsistent with the provisions of the act is consistent with this theory and inconceivable on any other, for the laws referred to must be the laws under which the company was incorporated in the first instance. Their repeal was a virtual dissolution of the company as a State corporation.

And again:

Who, then, is the sovereign in this case—the general government or the State? If, as I have attempted to show in the first part of this argument, the corporations which the road and telegraph have been constructed are the creatures of the general government, and have derived from that government all their rights and franchises, and, further, if the road and telegraph have been built for the use of that government "for postal, military, and other purposes"; and, further, if the general government has asserted for itself the power to regulate freights and fares, and in the event of the corporations, or either of them, shall fail to observe and perform the conditions which their franchises have been conferred, the general government may suspend the operation of their roads and direct all their incomes to be devoted to the use of the United States; and, further, if this corporation may, by consolidation with other corporations named in the acts of Congress, merge its existence with that of the United States into one gigantic whole; and, further, if this State, under whose law this corporation was first organized, has formally assented to all this, and has repealed all laws inconsistent with such assent, this question as to who is sovereign is already answered. *This corporation and its road and telegraph exist "by authority of the general government."*

Suppose this corporation had already failed to perform the conditions of the act of Congress, and the Secretary had already taken possession of this road and telegraph. Who would be sovereign then, the general government or this State? If the general government take possession implies sovereignty no less than possession with such conditions as the general government was now in possession, operating the road by its own engineers employed and paid by it, was now devoting its income to the use of the United States, is there any one so hardy as to assert that the general government would have to obey the laws of this State in operating the road and telegraph? The paramount would have to yield to the subordinate?

Again, suppose the legislature of this State should repeal the law under which this corporation was first formed, which it has the power to do, would the State be found so hardy as to contend that this company would cease to exist; that the act of Congress under which the company have constructed their road would be rendered inoperative; that the ends sought to be accomplished by Congress by the construction of the road would all be defeated; that the company would not continue to exist and enjoy all its present rights and franchises under and by virtue of the act of Congress? Obviously not; and if not, there can be found no one so hardy as to contend for the State the sovereign control of this corporation and its road and telegraph.

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any satisfaction the betterments or new construction, for which expenditures have been made; and, unless located on the subsidized railroad, the lien of the United States is in no way improved or benefited. Again, as regards the mileage pro-rating of earnings and expenses, when and where no separate account of subsidized railroad has been kept, such a method is found to work so inequitably toward the United States as to virtually dispose of all its claim to 5 per cent. in some cases, and in others to reduce them to a very small amount. As an example, the earnings and expenses of the subsidized and unsubsidized railroad from Kansas City to Denver (Kansas Pacific) for the year 1878 are found to be as follows:

Items.	Miles subsidized. 204.	Miles unsubsidized. 244.
Gross earnings.....	\$2,872,277 98	\$624,518 56
Expenses.....	1,432,225 63	631,975 39
Net earnings.....	\$1,440,052 35	\$542 96
Net earnings per mile.....	\$7,059 45	\$2 22

If the subsidized and unsubsidized road in the past ten years have had the same proportion of net earnings as that shown above—and there is no reason why it should not have been so—and an actual mileage pro-rate of the whole road operated be only allowed to the subsidized road, it is not seen how any settlement on such a basis can be made and the equities of the case considered, it being no fault of the government that separate accounts have not been kept. The result of such an apportionment of the whole net earnings for 1878 on that basis would be as follows:

	Total. 638	Subsidized. 204	Unsubsidized. 244
Miles operated.....			
Net earnings.....	\$1,440,052 35	\$889,646 65	\$550,948 66

The difference between five per cent. of \$1,440,052.35, or \$72,002.62, and the five per cent. of \$550,948.66 or \$27,520.29; which would be the amount lost to the government in that year alone.

To avoid these complications in the future, all of these companies have been required to keep the accounts of their subsidized railroad entirely separate and distinct from those of all other railroads owned, leased, or operated by them, and to furnish this office with the details of all joint tariffs and apportionment of earnings as arranged or changed from time to time.

In the Denver Pacific case it was decided that as that company did not receive any bonds from the United States and did not owe anything to the government, it was not liable to have any of its compensation for services retained by, or to pay five per cent. of its net earnings to, the United States.

Two important points, however, in regard to these subsidized railroads appear to remain undetermined: First, as to the Kansas Pacific, whether the government is entitled or not to retain one-half of the compensation for services performed on the *land-grant portion of its road*—that company, unlike the Denver Pacific, being still indebted to the United States; and, second, as to the Sioux City and Pacific, whether the government is entitled to retain one-half of the compensation for services performed on a *leased line*—the Sioux City and Pacific Company itself performing the service, and being still indebted to the United States. Similar complications exist on the Central Pacific and on the Central Branch Union Pacific Railroads.

COURT OF CLAIMS.

Two important cases are now on the calendar of the Court of Claims—those of the *Atchison, Topeka, and Santa Fé Railroad Company v. The United States* and the *Union Pacific Railroad Company v. The United States*; the former relating to the question of the amount of deduction the government is entitled to for the use of a railroad free of toll or other charge, and the latter as to the question of the right of the United States to fix the rate of compensation for carrying the mails on the Pacific Railroad.

When these questions are finally determined, and the doubtful points before alluded to are settled, it is probable that all contests with the railroads—land-grant and subsidized—will be terminated, and business relations resumed in an ordinary business way, which should secure to the government service by the railroads at the lowest rates and to the railroad companies prompt settlement and payment for the same.

THE GRANTS RECEIVED BY THE RAILROAD COMPANIES.

Since September 20, 1850, the date of the approval of the act of Congress (9 U. S. Statutes, 466) making a grant of land to the States of Illinois, Mississippi, and Alabama, in aid of the construction of a railroad from Chicago to Mobile, and by which nearly four million acres of land were disposed of, down to and including March 3, 1871, the date of approval of the last land-grant act, it is estimated that over 200,000,000 acres of the public lands have been withdrawn from entry, and subjected to the claim of States and corporations for railroad purposes. Of this quantity about 44,000,000 acres have been certified or patented under the grants, and more than 31,000,000 acres of this quantity have been for railroads in whole or in part west, north, or south of the Missouri River.

A detailed statement of the quantity certified to each of these companies is given in Appendix E.

The money value of these 31,000,000 acres of land, at the average price heretofore obtained for the portion disposed of by the companies, is not far from \$140,000,000, the actual sales made by the companies being over \$60,000,000, and not one-half of the 31,000,000 acres sold. Of these lands over 6,000,000 acres have been certified to the Pacific Railroads and branches, of which about 5,000,000 acres have been disposed of by them.

In regard to the conditions imposed upon all of these railroads as to government transportation, a full classification of the companies, according to the character of the condition, is made part of the appendix above named. A careful reading of the several acts which made these grants to the States, from the very first to the last, shows that there are certain other quite important conditions which also attach to them—the principal ones being “that the lands hereby granted shall be applied in the construction of said road and branches respectively, in quantities corresponding with the grant for each, and shall be disposed of only as the work progresses, and shall be applied to no other purpose whatsoever”; and “that the United States mail shall at all times be transported on the said railroad under the direction of the Post-Office Department, at such price as the Congress may by law direct.” It is questionable, therefore, whether the proceeds of the lands granted to aid in the construction of any of these railroads—the Pacific Railroads included—can be used for any other purpose.

The amount of United States bonds issued to the Pacific Railroads is \$64,623,512, the miles of railroad so subsidized is 2,495.525, and the average of this money subsidy is \$25,900.66 $\frac{2}{3}$ per mile.

The totals of the several items are as follows, viz:

Transportation rendered as per companies' books	\$10,853,131 02
Transportation rendered on <i>unsubsidized</i> road	1,120,857 07
Transportation rendered on subsidized road	\$17,732,273 95
One-half paid for in cash prior to act of 1873.....	\$4,287,960 01
One-half retained by United States prior to act of 1873.	4,193,104 87
Amount settled for prior to act of 1873	8,481,064 89
Remainder applicable to the "repayment of interest," "5 per cent. of net earnings," "sinking-fund," and to the companies	\$9,251,209 07
One-half, applicable to "repayment of interest" paid by the United States	\$4,625,604 54
One-half, applicable to the payment of "5 per cent. of net earnings"	3,753,128 86
To the payment of "sinking-fund" requirement	452,976 47
And payable to companies	419,499 20

Of the transportation on unsubsidized road, \$1,120,857.07, there is applicable to payment of 5 per cent. of net earnings, equivalent to a cash payment by the companies, \$438,716.43, and payable to the companies, \$682,140.64.

CONDITION OF THE "FIVE PER CENT." ACCOUNTS.

As exhibited in Appendix G, there is due, to December 31, 1878, from the Pacific railroads, on account of 5 per cent. of their net earnings, the sum of \$4,716,265.23, which includes an estimated sum as to the Kansas Pacific, giving no amount for either the Sioux City and Pacific or the Central Branch Union Pacific, no determination having been reached as to these companies, the accounts being complicated with those of leased roads, unsubsidized roads owned, construction and equipment, and other matters. Of the sum named, transportation withheld from the Union and Kansas Pacific Companies will more than offset the \$2,737,576.85 payable by them; but of the amount payable by the Central Pacific, \$1,978,688.38, transportation withheld is insufficient by the sum of \$648,271.96, payment of which amount in cash has been required of the company. Detailed statements of the 5 per cent. account of the Union Pacific and Central Pacific Railroad Companies are given in Appendix H of the report.

From these statements it will be seen that, as to the Union Pacific, from November 6, 1869, to November 5, 1875—

The amount claimed by the United States in original bill to be due was (to October 31, 1874, only)	\$1,040,056 29
The amount claimed by the company to be due was	178,790 26
The amount claimed by the United States to be due was.....	1,640,442 52
The amount found by the auditor of the court to be due was.....	1,404,859 41
The amount found by the Court of Claims to be due was.....	1,402,602 28
The amount found by the Hon. Justice Davis to be due was.....	1,301,507 55
The amount found by the Supreme Court to be due was	1,208,337 34

In addition to the amount due to November 5, 1875, \$1,208,337.34,

The statements show that the amount due on the same account from November 6, 1875, to June 30, 1878, is.....	\$942,455 87
And from July 1 to December 31, 1878	186,783 64

Total from November 6, 1869, to December 31, 1878..... \$2,337,576 85

From the statements given in the same appendix, it will be seen that the Central Pacific Railroad Company—

Amount claimed by the United States in original bill on account of five per cent. of net earnings from July 16, 1869, to October 31, 1874..... \$1,029,547.08
 Company made no showing.

Under the decision of the Supreme Court the company's statement makes amount due from November 6, 1869, to December 31, 1878, on account of "five per cent."

Amount found due by this office for the same period, and accepted by the company

The result of the "five per cent." suit against the Union Pacific Railroad Company was that the United States obtained judgment for \$1,029,547.08 and the company set forth that it owed, and within \$150,000 of the amount originally sued for.

The result of the examination of the accounts of the Central Pacific Railroad Company undertaken by this office immediately after the decision in the "sinking-fund case" was announced, was that the amount due by the company in accordance with the principles of the decisions in the "five per cent. cases" from November 6, 1869, to December 31, 1878, was \$745,391.86 more than the company's own statement set for.

So that, in these two cases alone, the government has received two million dollars more than the amount the companies had agreed to pay.

CONDITION OF THE SINKING-FUND ACCOUNT.

From July 1, 1878, to June 30, 1879, as shown in Appendix I, there was covered in to the sinking-fund established in the Treasury of the United States by an act of Congress approved May 7, 1878, the following sums, viz:

	Union Pacific.	Central Pacific.
One-half of transportation performed since July 1, 1878.....	\$300,809 88	\$126,136 13
Interest on bonds belonging to the sinking fund	743 75	458 75
Totals	201,353 61	126,594 88

By examination of the companies' books and accounts for the months ending December 31, 1878, the requirements for the sinking-fund for that period are as follows, viz:

One-half of transportation on subsidized road, government passengers

Government freight

*United States mail.....

Total one-half of transportation

Additional cash payment required to make the "whole transportation," the "five per cent. of net earnings," and "additional cash payment" together amount to 25 per cent. of net earnings.....

Total amount for sinking-fund.....

Sinking-fund deficient on June 30, 1879!

* The Union Pacific Company's charge for the whole amount allowed by the Post-Office Department, or for the whole amount allowed by the Treasury Department. Since the date of this report, namely, on November 1, 1878, the Union Pacific Railroad Company deposited in the Treasury \$181,329.11 and \$39,191.27 on account of "five per cent. of net earnings" for the months ending December 31, 1878.

It will be observed that although six months had elapsed from date of performance of service by the companies, the accounts for transportation other than mail had not been settled and the amounts covered in to the sinking-fund; and that but for the settlement and covering of amounts due for mail service since December 31, 1878, the deficiency of the sinking-fund would have been much larger.

As it is important that the sinking-fund be credited promptly with all moneys it is entitled to, these accounts for transportation should certainly receive the earliest attention on the part of administrative and accounting officers, otherwise the companies will have just cause of complaint. To show how the matter stands for the six months ending December 31, 1878, the Union Pacific Company's books have the United States charged with the following service, omitting for the sake of explanation the \$54,977.61 extra charge for mail service:

	Mail.	All other.	Total.
July 1 to December 31, 1878.....	\$94,216 14	\$144,964 35	\$239,180 49
Covered in to June 30, 1879.....	141,291 71	59,519 15	200,809 86
Composed of the following service:			
1878.....	94,216 14	53,798 49	148,014 63
1879.....	47,075 57	5,719 66	52,795 23
Showing that there remained of service performed in the six months ending December 31, 1878, of the Army transportation and miscellaneous accounts to be settled and passed to the credit of the sinking fund.....		91,165 86	91,165 86

It is fitting to state here that the sinking-fund act requires these credits and the money deposit by the company to be made on February 1st in each year. The present practice of the departments will render this utterly impossible, as many of the miscellaneous accounts do not reach the accounting officers by that time. In the recommendations for additional legislation it is submitted that this date be changed to April 1st, by which date also the accounts of the respective companies can be examined, and the amount of cash deposit required be determined.

CONDITION OF THE PROPERTY OF THE PACIFIC AND OTHER RAILROADS.

Immediately after the decision of the Supreme Court of the United States was announced in the "sinking-fund" cases, on May 5 last, steps were taken to examine the books and accounts of the Central Pacific Railroad Company, at their office in San Francisco, Cal.

In proceeding to San Francisco, on May 20th to 24th, the Union Pacific and Republican Valley Railroad as far as Osceola, Id., and the Utah Southern Railroad as far as over in company with the officers and directors of the more important stations and shops, the company's engine, and their coal mines at Rock Springs and Almy

. Railroad from Ogden to San Francisco was passed over via the Sacramento, Tracy, and Martinez route. (a Branch of the California Pacific and the South-division) as far as San José were traveled over in 1 as the Western Pacific from San José via Niles to

Oakland. On June 17th to 21st, in company with the general superintendent, the Central Pacific to Goshen, the Southern Pacific of California to San Francisco, the Southern Pacific of Arizona to Casa Grande, and the Los Angeles and San Diego and Los Angeles and Independence Railroads were traveled over, stopping at all principal stations, some minor ones, and shops. The subsidized portion of the Western Pacific between Sacramento and Niles was also passed over at that time.

The Oregon and California, the Oregon Central, and the Puget Sound Pacific in Washington Territory, were passed over in the company of the officers of those roads in the early part of July, excepting the route from Kalama to Tacoma, which was traveled over in the regular train.

In returning from California the shops of the Central Pacific at Sacramento, and their well arranged and admirably conducted institution—the railroad hospital—were visited.

In the legislative, executive, and judicial appropriation act, June 21, 1879, the Congress made an appropriation for a "railroad engineer" in this bureau, in order that the properties of the railroads might be examined and reported on. Mr. A. B. Nichols, Philadelphia, Pa., was appointed to the position on August 18, 1879, and once prepared to examine the subsidized Pacific Railroads and other land-grant roads as time or opportunity might permit.

His report of the condition of the Union Pacific, Central Pacific, Kansas Pacific, Denver Pacific, Central Branch Union Pacific, the Santa Fe and Pacific, Southern Pacific—northern division, Burlington and Missouri River in Nebraska, Chicago, Burlington, and Quincy—Indiana division, Saint Joseph and Western, and the Hannibal and Saint Louis Railroads is made part of this report and immediately precedes the appendixes.

The government having no inspection-car, and it being desirable only for convenience but for the sake of comparison to pass over various roads in the same car, and also, if possible, to pass over the Eastern and Western railroads which are considered "first-class roads," application was made to the president of the Union Pacific for the loan of a car suitable for the purpose, which was immediately granted, and generously responded to.

By permission of John M. Tincey, esq., general superintendent of the southern division of the New York Central and Hudson River Railroad, the inspection-car was attached to the regular train on that road to give an opportunity to see the line by daylight, leaving New York August 28th, at 10 a. m.

From the New York Central the route was over the Lake Shore and Michigan Southern to Toledo, thence by the Wabash to Hannibal. The Hannibal and Saint Joseph main line was examined by the engineer and in some detail; and owing to the great decrease in the traffic and profits of this road for some years past, it was with some surprise that the road and equipment were found in as good condition as they now are.

From Saint Joseph to Atchison over the Hannibal and Saint Joseph three days were given to an examination of the Central Branch Union Pacific and its extensions; six days to the Kansas Pacific; one day to the Denver Pacific; three days to the Colorado Central division of the Union Pacific; five days to the Union Pacific west of Cheyenne; two days to the Central, Western, and Southern Pacific—northern division; two days to Central Pacific in and around San Francisco, and Niles; three days to Central Pacific, Benicia route, and Central Pacific division; four days to Union Pacific, between Cheyenne and Omaha.

day each to the Burlington and Missouri River and Saint Joseph and Western; one day to the Sioux City and Pacific; two days to the Chicago, Burlington and Quincy; returning east over the Pittsburgh, Fort Wayne and Chicago, and the Pennsylvania by daylight through the kind permission of Col. Thomas A. Scott, president of those companies.

In nearly all these examinations the engineer, bridge superintendent, road-master, division superintendent, manager or some other officer or officers of the roads participated, and were found to be courteous and obliging in every respect.

The laws relating to all of these railroads, the standard determined on by the Board on Construction of Pacific Railroad in 1866, and the revised standard adopted by the honorable the Secretary of the Interior in his circular of instructions for the examination of railroads, dated April 28, 1871, all seem to require that the railroads built by government aid shall be in all respects "first class."

What, then, is a first-class railroad?

Without going into the detail of construction and equipment of a railroad or of the system and methods adopted for the transaction of its business as a common carrier, that railroad only can be considered "first class" which gives to the public safe, prompt, comfortable, convenient, reliable, and speedy service; and, to do this, the location, road-bed, track, bridges, tunnels, culverts, crossings, switches, signals, locomotives, cars, brakes, couplings, lights, stations, eating-houses, officers, employés, and attendants must be of such character as to enable this kind of service to be given. It is believed that the real and permanent interest of every railroad company will be best promoted when it serves the public best; and it can only serve the public in the best manner by using the best materials, adopting the best methods, and employing the best service.

The record of recent railroad accidents exhibits in one case a span of a large and costly bridge carried down bodily, not broken, by a stock train, or strained in some way from its bearings, the conclusion upon which must be that the bridge was either imperfectly built by being insufficiently secured, or perhaps carelessly examined, or unprovided with proper floor or guard-rail; in another case an important tunnel catches fire and interferes with traffic to such an extent that a temporary track has to be laid on another line—the fault of timber lining or a careless watchman; in another case, a yard-master insists on making up a freight train by transferring cars across the main track when an express train past due is known to be coming, in which case it is difficult to say which is the most to blame, the yard-master for his stupidity, or the system of management which permits lost time to be made up at any speed, or which does not change its schedule when it is found time cannot be promptly made; and a quite new bridge in yet another case goes down with six freight cars in an unaccountable manner, showing that either material or workmanship was not "first class."

These occurrences, day after day, suggest another question, whether we have any actually "first-class" railroads.

The nearest approach, probably, to a first-class railroad at the present time is to be found on the main line of the Pennsylvania Railroad—so near, in fact, that it may be called the modern standard. Without question that company is certainly trying to obtain the best material, the best methods, and the best service.

Another and important question now suggests itself, whether the main trunk line and branches of the Pacific Railroad, traversing nearly one thousand miles of desert country, sparsely inhabited, with little or

no local business, will ever need to be brought up to the condition of such a road as the Pennsylvania?

That it will be in the distant future, when traffic and population warrant it, there can be no question; but to-day, when the tonnage of the Union and Central Pacific together is but 2,632,000 and the tonnage of the Pennsylvania, but 758,295,000, and that of the Pennsylvania, operating one-third the number of miles of railroad, is 10,947,000 tons and 1,732,000 ton-mileage, equal to *seven and one-half times* the tonnage and *ten times* the ton-mileage, it can hardly be expected. The fact is, the condition of the Pennsylvania and other Eastern roads is the result of absolute necessity; the force of circumstances has compelled it, for it would be impossible to do the business under the old system and over the old road. For the amount of business done over the Pacific Railroad can be no doubt that they (the Central and Union Pacific) are in a better condition than when they were accepted by the government, in a better condition than many railroads east of the Missouri River, with a larger tonnage, and that they have been extraordinarily exempt from accidents of every kind.

The improvement of business on the Western roads generally has led to marked improvement in road-bed, track, bridges, and equipment. The Pacific trunk line and branches are not behind in this movement. It is confidently expected that the managers of all the roads that have been visited will remedy the defects which the engineer has noted, and will continue to improve their roads as the necessity of business may require from time to time, so that the properties shall in nowise be allowed to deteriorate.

CONDITION OF BUSINESS ON THE RAILROADS.

While the general business of the Pacific Railroads and the Union Pacific Railroads, which are required to report to this office, as well as all other Western railroads, is improving in a greater or less degree according to location or management, it is noted that the "local business" on all the roads, including the Pacific, has largely increased, "through freight business" has not increased as it might have been expected to do, and that "through passenger business" has rather decreased than otherwise, both in mileage and earnings.

The following tabular statement shows the condition and progress of the business of the Union Pacific, Central Pacific, and Kansas Pacific Railroads from 1872 to 1878 and for a portion of 1879:

Items.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
UNION PACIFIC.								
Miles operated	1,038	1,038	1,038	1,038	1,038	1,038	1,038	1,038
Passenger earnings	\$3,370	\$3,887	\$3,952	\$4,348	\$4,307	\$3,600	\$4,483	\$4,483
Passenger mileage	80,663	95,709	103,100	132,500	128,010	107,830	131,710	131,710
Freight earnings	\$1,337	\$5,026	\$5,136	\$5,093	\$6,591	\$6,821	\$9,738	\$9,738
Freight mileage	178,140	223,386	262,200	260,400	262,000	334,600	308,730	308,730
Gross earnings	\$0,169	\$10,650	\$10,962	\$12,460	\$13,370	\$12,948	\$16,471	\$16,471
CENTRAL PACIFIC.								
Miles operated	1,170	1,254	1,206	1,340	1,424	1,506	1,506	1,506
Passenger earnings	\$4,065	\$4,418	\$4,723	\$5,509	\$5,589	\$5,483	\$5,483	\$5,483
Passenger mileage	100,120	120,860	134,320	168,310	172,640	181,710	181,710	181,710
Freight earnings	\$6,967	\$7,402	\$7,187	\$9,056	\$10,027	\$9,738	\$9,738	\$9,738
Freight mileage	100,510	205,640	242,150	272,180	310,530	308,730	308,730	308,730
Gross earnings	\$11,003	\$12,863	\$13,720	\$15,685	\$16,004	\$16,471	\$16,471	\$16,471

Items.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879
KANSAS PACIFIC.								6 mo
Miles operated.....	673	673	673	673	673	673	673	4
Passenger earnings.....	\$1,172	\$1,242	\$1,111	\$933	\$766	\$690	\$763	\$
Passenger mileage.....	20,664	23,500	22,020	19,290	18,230	18,940	22,173	.....
Freight earnings.....	\$2,204	\$2,077	\$1,905	\$2,167	\$1,968	\$2,215	\$2,425	\$1,5
Freight mileage.....	72,368	61,980	62,470	72,120	71,540	85,390	140,013	.....
								8 mo
Gross earnings.....	\$3,723	\$3,569	\$3,356	\$3,368	\$3,000	\$3,384	\$3,610	\$2,5

The improvement of business on the Kansas Pacific since 1876 has been about 10 per cent. annually, or for 1879 over 1876 about forty (4) per cent. This has chiefly been caused by the great local business which has sprung up in Kansas during the last two years. Many of the other roads in that State and in Nebraska have had a similar experience, notably the Central Branch Union Pacific, the Atchison, Topeka and Santa Fé, and the Burlington and Missouri River Railroad in Nebraska. The gross earnings of these railroads for the years 1876, 1877, 1878, and 1879 have been as follows:

Central Branch Union Pacific.

	1876.	1877.	1878.	1879.
Miles operated.....	100	120	172	Estimated 1
Gross earnings.....	\$172,652 68	\$230,436 54	\$324,953 77	\$1,100,000

Atchison, Topeka and Santa Fé.

	1876.	1877.	1878.	1879.
Miles operated.....	697	734	807	Estimated 1
Gross earnings.....	\$2,486,582 05	\$2,679,106 51	\$3,950,868 09	\$6,400,000

Burlington and Missouri River Railroad in Nebraska.

	1876.	1877.	1878.	1879.
Miles operated, estimated.....	240	375	400	4
Gross earnings.....	Estimated \$900,000	\$1,366,436	\$1,921,350	\$2,400,000

These examples forcibly illustrate the extraordinary character of the movement of population and business west of the Missouri River.

Appendix K of this report gives a condensed statement of the business of most of the railroads in the United States for the years 1877 and 1878, from which the following deductions are made, viz:

Items.	Year ending Dec. 31, 1878.	Year ending Dec. 31, 1877.	Increase.	Decrease.
Length of lines.....	80,831	73,208	1,623	.....
Reported miles operated.....	78,650	74,111	3,539	.....
Total stock and debt.....	\$4,772,297,349	\$4,800,202,023	.....	\$33,904,674
Total stock and debt per mile.....	60,677	64,631	.....	.....
Gross earnings.....	\$490,103,351 00	\$472,909,272 00	\$17,194,079 00	.....
Working expenses.....	302,528,164 00	301,432,575 00	695,609 00	.....
Net earnings.....	187,575,187 00	170,976,697 00	16,598,490 00	.....

Showing that while gross earnings for 1878 increased but a small amount and five-eighths ($3\frac{5}{8}$) per cent. over those of 1877, the increase in net earnings was nearly nine and three-quarters ($9\frac{3}{4}$) per cent.

THE UNION PACIFIC RAILROAD COMPANY.

This company has rendered and continues to render such service as has been called for from time to time.

This company operates $1,033\frac{2}{3}$ miles of single-track railroad, being the distance from the east line of the company's property at Council Bluffs, Iowa, to Ogden, Utah Territory, the 5 miles from Ogden to the junction with the Central Pacific being leased to and operated by that company; $1,038\frac{1}{10}$ miles of the road are subsidized.

As to the condition of the property the engineer's report, herewith, shows that there remain many places where the line of the road, or both, may yet be improved; that over 50 per cent. of the road-bed west of North Platte should be widened; that between Sidney a good many ties need renewing; that in view of increasing business and the use of heavier rolling-stock, steel rail used for main line should be heavier than 56 pounds or 58 pounds to the yard; that between Cheyenne and Valley a large quantity of iron needs immediate renewal; that although the surface and line of the road, as a rule, is good, there are a number of curves and some tangents which should be improved with an instrument; that the switches and curves leading into the main line can be much improved; that the road is not provided with "edge-boards" or "mile-posts"; that timber guards are not laid on all bridge floors, and that the policing of the road is not of the best. The depot buildings, machine-shops, water-tanks, engine-houses, and rolling-stock are in good repair generally, and are sufficient for the requirements of business.

The company is rapidly substituting steel rails for iron, and has laid some 460 miles of track so laid. The bridges on the whole road are being improved and strengthened. Water-tanks of larger capacity and of more durable material are being put up wherever new ones are required. New locomotives and cars have been added to the road from time to time, and all of it is now in good condition. A large amount of material of every kind is kept on hand.

During the calendar year of 1878 the company expended for maintenance of way, bridges, and buildings, &c., \$1,654,795.82, or about 10 per cent. of the entire operating expenses including taxes, nearly all of this being on track, rails, and ties alone; there was also expended for additional construction, equipment, &c., \$271,738.48; the whole amount being to \$1,926,534.30, or over \$1,850 per mile of road operated.

The company has neither track department, engineer department, nor a superintendent of track *per se*, but has a superintendent of maintenance. It can hardly be questioned whether in the expenditure of so much money as \$2,000,000 nearly annually for maintenance of way, &c., it would be economy for the company to employ a superintendent of track with one or more assistants. A great part of the benefit to be obtained from the use of steel rail must come from the manner in which it is laid, the uniformity of system and detail in track and road repairs must be maintained both labor and material. It is almost impossible for a general superintendent to give to this part of the work as much personal attention as is really required without letting some of the work suffer; the superintendents must, therefore, rely on roadmasters

whom some practical engineering superintendence is nearly always required.

The transfer grounds and the buildings of the company at Council Bluffs are ample for all business purposes, well arranged, in good order, and creditable to their enterprise. The hotel part of the building is excellently kept, neat, clean, and comfortable, but will probably need enlargement at an early day, as it is now often overrun with guests. The company proposes to put shelter-sheds on the different platforms where the eastern connecting lines run in their passenger trains. It behooves every railroad company to study the wants and necessities of the traveling public and furnish all conveniences liberally and promptly.

The grounds and buildings of this company at Ogden, in connection with those of the Central Pacific, Utah Central, and Utah and Northern, require attention and should be remodeled at once. The buildings are poor, and crowded together without definite plan or convenient arrangement, making the risk from fire quite serious, although the water-supply is considered ample. Of the accommodations for the public there are virtually none. The tracks are of mixed, unknown, or joint ownership, often leading to complications among the employes of the various roads. It is understood that plans have already been made or proposed for a union passenger depot at this point and for an improved arrangement of freight depots, yard, engine-houses, and shops. They cannot be adopted too soon. One fire might destroy rolling stock alone to an amount in excess of the whole cost of such an improvement.

The coal mines owned and worked by this company constitute one of its most valuable assets. The production of the mines at Carbon, Almy, and Rock Springs for the last four years has been as follows:

1875, 208,222 tons, costing at an average \$1.88 per ton.
 1876, 264,771 tons, costing at an average \$1.41½ per ton.
 1877, 275,480 tons, costing at an average \$1.13½ per ton.
 1878, 275,795 tons, costing at an average \$1.04½ per ton.

The shipments of coal over the road, including that for the company's own use, have been as follows:

	Tons.		Tons.
1871.....	178,818	1875.....	315,489
1872.....	271,147	1876.....	274,428
1873.....	324,664	1877.....	263,712
1874.....	286,463	1878.....	254,426

The average cost of the coal used by the company, including freight, has been as follows: 1876, \$4.50 per ton; 1877, \$4.17 per ton; 1878, \$4.25 per ton.

The sales of coal by the company have been as follows:

1876, 65,042 tons, at an average price of \$6.51 per ton.
 1877, 92,289 tons, at an average price of \$6.26 per ton.
 1878, 102,240 tons, at an average price of \$6.13 per ton.

The mines being located on the western end of the road, the length of haul becomes an important consideration in the question of the best policy for the company to adopt so as to increase its coal business. The Rock Springs coal is the only one at all suitable for domestic use. The Evanston (Almy) coal is a good steaming coal. Rock Springs is 831 miles and Evanston is 957 miles from Omaha. The two great necessities of the country through which the railroad passes for hundreds of miles are good water and fuel. To get the country settled, *cheap* fuel is a prime necessity. Leaving entirely out of consideration the question of competition with other coals, it cannot but pay the company to supply all consumers west as well as east of these mines at the very lowest rate possible. The results could hardly be otherwise than that more

coal would have to be mined, more people would settle on the more business of a permanent character would be gained. The great prosperity of this railroad must be derived from the local and the development of the surrounding country. At one cent per mile for all freight hauled in 1878, the cost was \$3,660,000, or a thirds of the expense, while the average rate charged for freight including coal, was 1.96 cents per ton per mile. Coal is one of the cheapest classes of freight. At 2 cents per ton per mile, and of 50 cents per ton on the coal, the "Almy" coal could be sold at Lake City at \$4 per ton, and the "Rock Springs" at \$6.50. The price charged for the Rock Springs coal in Salt Lake is \$8. It will be to the company's best interest to examine into this thoroughly with a view to placing themselves on a good footing with the people as well as increasing their own profits.

The lands of the company, especially those west of Julesburg, are as valuable as they have often been estimated to be. Many more acres will only be available when some cheap, effective system of irrigation has been found. The company has quite recently disposed of a quantity of its desert lands at a merely nominal price in order to give an irrigating company the opportunity to put their plans to a test; should they be successful, much of the land will be greatly increased in value. To December 31, 1878, the company has sold 296 $\frac{28}{100}$ acres of land. During the last six months of 1878 there were 99,062 $\frac{2}{3}$ acres, and amounted to \$447,654.53, and during the months ending June 30, 1879, about 150,000 acres were disposed of for \$491,477.88.

The total receipts from sales of lands and lots (including interest) to June 30, 1879, have been..... \$81,100.00
The total expenses and taxes..... 1,000.00

Net proceeds \$80,100.00
The land and town-lot notes and cash held by the company on June 30, 1879, amounted to..... \$4,000.00
Land-grant bonds outstanding..... 6,000.00

Balance to be provided for from future sales..... \$2,000.00

The gross proceeds of sales of lands are, by the terms of the mortgage, required to be used for the redemption of bonds, all expenses and taxes having to be paid by the company out of other income.

A quite large item in the assets of the company is that consisting of stocks, bonds, and accounts of other companies. These assets represent moneys invested in branch railroads. These railroads are almost all part feeding lines, and give to the trunk line considerable increasing business. The names of these railroads, &c., and the amounts invested in them, are as follows:

The Colorado Central..... \$4,000.00
The Utah and Northern..... 1,000.00
The Utah Southern..... 1,000.00
Omaha and Republican Valley..... 1,000.00
Utah Central..... 1,000.00
Utah Western..... 1,000.00
Hastings and Grand Island..... 1,000.00
Summit County Railroad..... 1,000.00
Occidental and Oriental Steamship Company..... 1,000.00
Sundry other stocks and bonds..... 1,000.00

Total..... \$27,000.00
On June 30, 1878, these investments amounted to..... 5,000.00

Increase \$22,000.00

These investments are probably necessary and advisable, in order to keep control of the lines as well as to develop the country for business. There is some risk, perhaps, in the company making such investments, especially by constructing new railroads to compete with those already built belonging to other companies. It is doubtful whether either of such competing lines can be profitable; to say the least, they cannot until the country has become more densely populated. This is particularly the case in such instances as the projected line to Sioux City, Iowa, and the Colorado Central from Cheyenne to Denver; in the former instance, the Sioux City and Pacific, a subsidized branch of the Union Pacific, having direct connection with the Union Pacific at Fremont, Nebraska, is seriously affected; in the latter instance, the Denver Pacific, from Denver to Cheyenne, another authorized branch of the Pacific Railroad, was virtually bankrupted, and has subsequently fallen into the control of this company. So far as the government interest in the Pacific Railroad and branches is concerned, that of an extraordinary creditor of all of them, it may be that some steps to protect that interest may be necessary to be taken, either by prohibiting such roads from being built, by requiring the companies to afford each other equal facilities and regular business connections and arrangements, or by regulating the rates of freight and fare thereon.

The Union Pacific Company does its own express business, and has made quite large profits therefrom, as is shown by the following statement:

Year.	Express earnings.
1870	\$281,691 76
1871	307,731 32
1872	336,333 35
1873	410,190 76
1874	381,303 77
1875	444,174 23
1876	502,738 42
1877	430,791 98
1878	488,645 92
1879 to June 30.....	179,093 86
Total	\$3,762,695 37

The special "expenses" and "damage to express goods" for the fiscal year ending June 30, 1878, were—

Expenses	\$65,362 90
Damages, including the loss by robbery of about \$40,000.....	51,821 15
Total	\$117,184 05

The total expenses incurred in doing this business of \$3,762,695.37 have been estimated at $12\frac{1}{2}$ per cent. for special expenses and $7\frac{1}{2}$ per cent. for haulage, \$752,539.07 for the entire period, leaving net earnings \$3,010,156.31, of which the government 5 per cent. has been \$150,507.81. The six months ending June 30, 1879, have been \$50,000 less than the same period in 1878. This is owing principally to the gold shipments under the new regulations by which Treasuries have been carried in the mails, and of which the company commends it brings them much additional risk both to life and property; them no additional pay.

One of the profitableness of this express business is now apparent to here and at this length for the reason that the Central Company does not operate its own express, but entered into a

contract with Wells, Fargo & Co., years ago, from whom it has been during the same period as that above shown for the Union Pacific.

The sum of.....	\$
Deducting estimated expenses.....	

Leaves but	\$
as net earnings of the Central Pacific express business—5 per cent of which payable to the government is.....	

This shows that such a contract operates to the detriment of the railroad company and the government to such an extent that it is necessary to prevent by requisite legislation such farming of the railroad company's business. The government directors of the Union Pacific Railroad Company in 1870, or before, interfered to prevent a contract being made by that company with Wells, Fargo & Co. The act of May 7, 1878, which requires 25 per cent. of net earnings to be paid to the United States, it makes a very much more important difference in dollars and cents than it could have done in the past. With this demand made upon the president of Wells, Fargo & Co. to return showing the amount of the net earnings, &c., of that company since November 6, 1869, upon which it is claimed 5 per cent. is payable to the United States. If the express company is not to pay this 5 per cent. of net earnings, or if the courts decide against the claim of the United States, the railroad company should be required by Congress to do its own express business.

The Union Pacific Railroad Company, in opposition to the demand of the government directors, as it is understood, on October 1, 1881, entered into a contract with Mr. George M. Pullman to run his sleeping-car business on their railroad. Another contract was subsequently made with the Pullman Pacific Car Company. This last contract expires September 1, 1882. There does not appear to be any reason why this company should not run its own parlor and sleeping cars as well as do its own express business. The peculiarity of the case is, that while this company runs its own express business, it farms out its sleeping-car business to the Pullman Pacific Car Company, while the Central Pacific, on the contrary, farms out its express business to Wells, Fargo & Co., and runs its own sleeping cars. There appear to be no earnings from the sleeping-car business reported by this company, but the expenses to the company has been put from October 1, 1867, to June 30, 1881, at \$543,204.95. For a comparison of this showing with that of the Central Pacific reference is made to the discussion of the affairs of that company in another part of this report. As in the express business of Wells, Fargo & Co., on the Central Pacific, a demand was made on the Pullman Pacific Car Company for a statement of net earnings on the Union Pacific Railroad since November 6, 1869, to ascertain the amount of "five per cent." of the same, which is claimed is due from the Pullman Pacific Car Company or from the Union Pacific Company to the United States.

The first class or express passenger train service and equipment of the Union Pacific are fully up to the requirements of the business. The speed of express or first-class trains, including stops, averages about 19 miles per hour; that of emigrant trains about 12 miles per hour. Great improvement is being made in the eating-houses on the road, which is being vital to the interests of the company to serve the traveler in the best manner, the train accommodations, quality of rolling stock, cleanliness, speed, meal hours, and the quality of and prices of meals, and other matters, may safely be left to the good judgment of the general manager. It is, however, suggested that a fast mail and passenger train on this road—stopping only at major points, or at division termini, now that the Central

about to shorten the time on its line—would be well patronized; whether it would pay the company can only be determined by practical test. A gain of twenty-four hours in crossing the continent would be appreciated by all business men, both as regards mail and passenger transportation. The weight of mail carried is increasing to such an extent that ere long it may be necessary to run a through and local postal car. Every inducement that can be should be offered by the company toward increasing its passenger travel. The decrease of through passenger business involves many questions which should be carefully examined into. If a more liberal policy, lower rates, and quicker trains will build up a much larger passenger business it may pay the company to inaugurate a change, especially during the spring and summer months.

The receipts and expenditures of the company for the year ending June 30, 1879, have been as follows:

RECEIPTS.		
United States passengers.....	\$172,114 76	
United States freight.....	308,120 36	
United States mail.....	*596,775 00	
		\$1,077,010 12
Commercial passengers.....	2,956,258 36	
Commercial freight.....	18,089,814 78	
Express.....	437,712 52	
		11,483,785 66
Miscellaneous earnings.....		344,061 30
Total earnings.....		\$12,904,857 08
Discount and interest.....	\$784,322 96	
Interest on bonds held.....	449,068 39	
Dividends on stocks held.....	517,399 14	
Gains on investments.....	496,419 96	
Miscellaneous.....	35,187 81	
Total income receipts.....		2,282,418 26
Total receipts.....		\$15,187,275 34
EXPENDITURES.		
Conducting transportation.....	\$974,070 74	
Maintenance of way.....	1,494,592 70	
Motive power.....	1,858,725 79	
Maintenance of cars.....	432,533 68	
General expenses (taxes included).....	638,372 82	
Total operating expenses.....		\$5,398,295 63
Discount and interest.....	87,409 00	
Interest on funded debt.....	4,234,133 66	
Premium on gold.....	3,779 74	
Loss on investments.....	248,841, 88	
Dividends paid.....	1,653,525 00	
Total income expenses and dividends.....		6,227,689 28
Total expenditures.....		\$11,625,984 91
Surplus receipts over expenditures.....		\$3,561,290 43
Applicable to payments under the act of May 7, 1878, 25% of net earnings after deducting \$1,633,860, in- terest on first-mortgage bonds, \$5,872,701.45 × 0.25=	\$1,468,175 36	
Interest on first-mortgage bonds due July 1, 1879.....	816,930 00	
Dividend 1½%, on \$36,762,300 stock, payable July 1, 1879	551,175 00	
		2,836,280 36
Net surplus for the year.....		\$75,010 07

* This is the company's charge. The Post Office Department allows but \$376,864.58.

† Including \$874,127.49 of "company freight."

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liabilities and assets of the company on June 30, 1879, were as follows:

LIABILITIES.		ASSETS.	
States bonds.....	\$27,236,512 00	Road and equipment.....	
on U. S. bonds.....	18,421,087 53	Cash.....	
unded debt.....	50,404,000 00	Company's bonds and stocks.....	
t due and accrued.....	*809,891 08	Other bonds and stocks.....	
iyable.....	3,382,824 14	Bills receivable.....	
its payable.....	1,170,021 07	United States transportation with-	
ids payable.....	*555,933 50	held.....	
stocks.....	36,762,300 00	Accounts receivable.....	
		Operating department.....	
	138,811,589 30	Land cash, and land notes.....	
iles.....	9,062,038 56	Land expenses.....	
		Balance, deficit or debit to in-	
		come account.....	
	\$147,873,627 86		

* Including payments above stated to be made July 1, 1879.

Account of this company with the United States on all accounts is as follows:

portation performed for the United States, and withheld in excess of the one-half to be retained under act of July 2, 1864.....	\$
to United States on account of five per cent. of net earnings to June 30, 1879.....	\$2,444,428 28
to United States on account of transportation 12 months ending June 30, 1879, requirement for sinking fund.....	538,505 06
to United States on account of additional payment required to make 25% of net earnings.....	97,530 17

Total due the United States on all accounts.....

Excess withheld.....

The above statement is based on the company's charge for the mails, which for the 41 months ending June 30, 1879, is the amount allowed by the Post-Office Department by the act of July 2, 1864, \$354.44.

The following statement is based on the amount allowed by the Post-Office Department for the same period:

portation performed for the United States in excess of the one-half authorized to be retained by law.....	\$
to United States on account of "five per cent." to June 30, 1879.....	\$2,400,610 56
to United States on account of transportation requirement for sinking fund to June 30, 1879.....	428,549 84
to United States on account of "additional payment" required for sinking fund.....	556,098 07

Total due United States on all accounts....

payable by the company in cash.....
interest due on judgment of July 27, 1875, to

Net deficit.....

Suit is now pending in regard to the subject to which the company has \$68.43 in the Treasury for the six months ending June 30, 1879, \$782.55 applicable to the sinking fund, and payment of five per cent. of net earnings.

The condition of the Union Pacific sinking fund is shown in appendix I of this report. The amount of deposits on that account to June 30, 1879, is \$201,553.61, which has been invested in five per cent. United States bonds, principal \$193,400, premium \$8,116.25, leaving a balance uninvested at that time amounting to \$37.36. Under the working of the law, it is estimated that the sinking fund will receive for the current year \$750,000, and that "one-half of transportation" and "five per cent. of net earnings," to be credited directly to interest paid, will also equal \$750,000. Such changes as are absolutely required to enable the provisions of the law to be complied with promptly have been embodied in the recommendations for legislation in the latter part of the report. The deduction of interest on first-mortgage bonds from the ordinary net earnings reduces them so that the twenty-five per cent. will not amount to as much as was anticipated when the law was passed, but it is not deemed advisable to recommend any change in this respect.

THE CENTRAL PACIFIC RAILROAD COMPANY.

Since the announcement of the decision of the Supreme Court of the United States in the case of the Central Pacific Railroad Company *vs.* Albert Gallatin, No. 972, October term, 1878, on May 5, 1879, this company has rendered such reports as have been required, and submitted its books and accounts to examination.

The company owned, leased, or operated 2,323.61 miles of single-track railroad on June 30, 1879. Of the line owned by the company, 860.66 miles were subsidized by a loan of United States bonds and a grant of lands.

The engineer's report shows in considerable detail the condition of the property covered by the lien of the United States, as well as other portions of the railroad operated by the company. The small map accompanying his report gives a correct idea of the system of roads operated by the company in the vicinity of San Francisco. From his report it appears that some three (3) miles of the subsidized line of the "Western Pacific" (former name of company owning the road between American River and San José) has been abandoned as main track, and consequently has no earnings; and also that about one (1) mile of the same road near Niles has been entirely abandoned and the track removed.

In prorating local business at the time of settlement of the "five per cent." account, the officers did not object to considering the "subsidized and earning" mileage as including these abandoned pieces. There may be some question, however, as to what the lien of the United States might cover in the event of substitution of an entirely different property as the line of the road. The original through line from Ogden to San Francisco was by way of Niles, 883.23 miles, of which 830.66 were subsidized; the present through line is by way of Tracy and Martinez, 894.64 miles, of which 805.75 are subsidized; and the proposed new route *via* Benicia will be 833.47 miles, of which but 737.50 have been subsidized.

The subsidized line from a point five miles west of Ogden to San José is 860.66 miles, and for the major part passes over a country of the most barren and uninviting character. The engineer's report gives a detailed statement of the condition of the property. From his statement it appears that nearly one-half of the tunnels should be lined with masonry instead of timber, as at present; that both the surface and line of the track are for the most part excellent, showing that great care is bestowed upon them; that the road-bed and ditches are kept clean and in shape that there are no mile-posts or danger-boards at road-crossings; that

wherever needed the road is fenced by the company; that the bridges on the line are getting old and must soon require extensive renewals; that all temporary trestle approaches to the large bridges on the mountain should be filled and proper masonry abutments built; that bridge floors require more ties and that guard-rails should also be placed on them; that the company is building a new passenger-station at Sacramento to accommodate their increasing local business; that the water supply is one of the most serious difficulties that the company has to contend with; that the engine-houses are ample and well built.

The shops of the company at Sacramento are well arranged, and so located that they can be enlarged without interfering with their general system whenever the requirements of business may demand it. These shops furnish work to over 1,000 machinists and laborers. Many parts of the yard have been planted with the Eucalyptus, which affords good shade, and it is said to destroy malarial influences in the atmosphere.

The hospital of the company is also located at Sacramento, and admirably serves the purpose for which it was instituted. It is kept up by monthly contributions or assessments on the employés of the company, who are all entitled to its benefits. The rooms are scrupulously clean and neat, although plainly furnished. Private-pay patients are sometimes admitted, and in case of accidents passengers as well as employés are cared for. The company has a regular corps of physicians on the line of the road, that being necessary for the proper care of the employés at many points where it is difficult to obtain medical aid in time of sickness.

One of the most marked and important works on the line is the great snow-gallery on the Sierra Nevada Mountains, extending for about 28 miles without a break. Built in the most substantial manner, so as to sustain the immense weight of avalanches of snow, they have cost the company quite a large sum of money. The regular service of two fire-engine trains, with a large number of watchmen, and an elaborate telegraph and telephone system is constantly required, at a heavy expense. It is suggested by the engineer that a structure composed entirely of iron might be found more economical. Fires in the snow-sheds have cost the company nearly ten thousand dollars during the present year.

The equipment of the road is in good condition and ample. The sleeping cars are fully equal to any to be found elsewhere. The company has built a large number of second-class sleeping-cars suitable for emigrants or such persons as choose to carry their own blankets, and has found them quite a success. If these cars could run through from and to Omaha, or the Union Pacific provide similar ones, it would make the journey much more comfortable for the large number of persons who cannot afford to travel in the regular sleepers. No additional charge is made for passage in these cars, merely the second-class or emigrant fare being paid.

The ferry service between Oakland and San Francisco and the local railroad service in Oakland and its suburbs is to be commended. The boats are among the finest of the kind to be found anywhere in the country; large, fast, and luxuriously furnished. The Oakland trains are generally composed of nine or ten passenger-cars, each capable of seating 80 passengers, and are kept in good condition and clean. The ordinary fare from San Francisco to Oakland wharf by steamer and by train to Oakland, varying from 5 to 8 miles or more, is 15 cents. Commuters are charged \$3 per month, at which price the company's service is probably the best and cheapest of the kind in the country.

Among the new enterprises of the company may be mentioned the

filling up of a portion of the long wharf at Oakland, which will take probably two years to complete, and cost in the neighborhood of three quarters of a million dollars. During the six months ending June 30, 1879, the company expended nearly \$200,000 on this work and on the wharf. Another is the new mammoth train-transfer steamer Solano, to be run between Benicia and Carquinez, on the new through route for overland travel from Sacramento to Oakland, which will be 61.17 mile shorter than the present route via Martinez. The line has cost the company a good deal of money to protect it from the heavy floods of the Sacramento Valley, and where it runs through the "tule" lands, sinking ground has been the cause of much trouble and anxiety. It may be questioned whether the line is as safe or economical as the present one although it is so much shorter.

The company has expended \$473,790.89 in new construction and improvements and \$201,758.04 in new equipment during the twelve months ending June 30, 1879, and \$1,995,617.35 in maintenance of roadway, track, and buildings. The organization of the track department under Mr. L. M. Clement, the chief assistant engineer, is well adapted to its work, getting good service under quite economical expenditures, and merits special commendation. The main element in low cost of transportation is a good, smooth track, as it is also the only substantial basis of the prosperity of a railroad company, many expenses being largely reduced thereby. With a system embracing over 2,600 miles of track it is not seen how the service of such an important department can be dispensed with.

The company has already commenced to relocate its tracks and buildings at Ogden independently of any concerted action with the other companies whose termini are at that point. The remarks in regard to better passenger accommodation at this place made in the Union Pacific case apply equally to this company. No time should be lost in rearranging and reconstructing the buildings and tracks.

The company owns some coal-mines at Almy, on the Union Pacific, as well as having an interest in coal properties elsewhere. The consumption of coal during the year reached 134,264 tons of 2,000 pounds, at a cost nearly \$6 per ton—fully fifty per cent. more than it costs the Union Pacific, to which company it pays quite a high tariff for hauling from Almy to Ogden.

As on the Union Pacific Railroad, there are millions of acres of land granted to this company on their road which are yet more barren and uninviting than those of that company. An interminable desert of sand and sage-brush, years must elapse before anything can be done with them even by irrigation. From all sales of land to June 30, 1879, the company has received cash and notes to the amount of \$3,007,802.03, or about \$6.21 per acre, from which expenses are to be paid. The quantity sold was 635,425 acres, but included in these are the lands on the line of the Oregon and California Railroad, which are much more valuable than any others owned by the company.

The express business on the Central Pacific system of railroads is done by Wells, Fargo & Co. under a special contract. A statement of the business has been given in speaking of the Union Pacific Express and the questions arising therefrom in regard to the right of the United States to "five per cent." of the net earnings.

The sleeping and parlor car business on this road is done by the company, which owns forty-one (41) first-class sleeping and drawing-room cars. The receipts from this business for the year ending June 30, 1879, were \$166,746.05. For the nine years ending December 31, 1878, the re-

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and the extra expenses \$188,586.75. The company charges but three-fourths of a double berth, while the Pullman charges for the same service on the Union Pacific. If the earnings from this source had been increased 25 per cent, the government would have received \$471,466.25 instead of \$300,000, or more, as it has received. If the Pullman Company are permitted to operate on the Union Pacific, the government will fail to receive the earnings of that road to apply on its debt at 5 per cent." under the act of 1862—

on this road is unexceptionably comfortable, both first and second class as on the Union Pacific, namely, 19 miles and 11 miles per hour for freight. There is 36 miles per hour for passenger trains. It is believed that the equipment is good enough to justify the speed of passenger-trains so as to

hour, including stoppages—gaining 100 miles to San Francisco.

Expenditures of the company for the year are as follows:

RECEIPTS.

States passengers.....	\$1
ites freight.....	1
& Co.....	
.....	
.....	
*	
.....	
.....	
.....	\$1
.....	\$42,205 50
ments.....	81,578 36
.....	407,519 05
.....	
.....	
.....	\$1

EXPENDITURES.

[illegible]

REPORT OF THE SECRETARY OF THE INTERIOR.

Surplus receipts over expenditures.....		\$2,996,3
Applicable to payments under the act of May 7, 1878..	1,000,000 00	
New construction	473,790 89	
New equipment	201,758 04	
Land-bond redemption	302,227 28	
		<u>1,977,7</u>
Net surplus applicable to dividends.....		<u>\$1,018,5</u>

This surplus will not pay a two per cent. dividend on the capital of the company.

The liabilities and assets of the company on June 30, 1879, were as follows, viz:

	Liabilities.		Assets.
United States bonds	\$27,855,680 00	Road and fixtures.....	\$134,921
Interest on United States bonds ..	18,435,441 01	Equipment	8,014
Other bonded debt.....	57,063,000 00	Real estate	1,490
Interest due and accrued	1,392,243 00	Cash	1,187
Bills payable.....	4,888,258 83	Fuel, material, &c	1,773
Accounts payable.....	2,128,990 97	Company's stock and bonds.....	24
Dividends payable.....	2,464 00	Other stocks and bonds, and miscellaneous investments ..	3,640
Capital stock	54,275,500 00	Bills receivable	1,238
		Sinking funds in hands of trustees	3,396
		Accounts receivable.....	1,007
		United States transportation withheld.....	3,465
			<u>159,067</u>
Trustees land-grant mortgage.....	166,037,577 31	Balance—deficit, or debit to income account.....	7,123
	153,295 39		<u>166,190</u>
	<u>166,190,872 70</u>		

The account of this company with the government to December 31, 1878, is as follows:

Transportation performed for the United States and withheld, in excess of the one-half to be retained under the acts of July 1, 1862, and July 2, 1864.....	\$1,454,5
Due the United States on account of 5 per cent. of net earnings to June 30, 1878	\$1,871,430 00
Due the United States on account of 5 per cent. of net earnings to December 31, 1878	107,258 38
Due United States on account of transportation requirement for sinking fund under act of May 7, 1878	123,852 02
Due United States as "additional payment" required to make 25 per cent. of net earnings, under act of May 7, 1878	181,329 51
Total amount due the United States.....	<u>2,233,</u>

* Difference, payable in cash..... 829,

The settlement of the accounts of this company with the government both as regards the "five per cent. of net earnings" and the "requirements under the act of May 7, 1878," was undertaken in the office of the company, in San Francisco, Cal., on the 29th of May, and was practically closed on July 20, 1879.

Many difficulties were met with in applying the principles of the Supreme Court decision in this case. It was found that separate accounts of the subsidized and unsubsidized railroads had not been kept; the accounts had been kept in coin and currency—the bulk of the

* Of this amount \$220,520.78 was paid to the United States Treasurer on November 10, 1879, and \$609,080.69 on November 20, 1879.

penses being paid in coin; that, although the "through" and "local" business could be separated on the basis of *currency* as "through" and *coin* as "local," yet some basis of prorating expenses had to be agreed upon; that large amounts had been expended through the general expenses account, which could not properly be charged to the subsidized line; that new construction must be separated into such items as improved the government lien and such as did not; that the rentals of leased lines reaching over \$2,250,000 annually, and the business on those lines being unknown, added still more to the complications; and above all, that so much time had intervened that it was next to impossible to determine quite as exactly as was desired many details of expenditure.

The statement made in Appendix H, schedule i, shows the company's estimate of the settlement of the "five per cent." to have been ^{\$3,602.3} of \$41,289,759.51 of net earnings, amounting to \$1,233,296.52, or 59.74 per cent. The statement shown in schedule k, in the same appendix, gives the result arrived at for the government, which may be summarized as follows: Total net earnings—coin (local business), \$36,377,313.32; currency (through business), \$22,691,412.55.

The proportion of mileage of subsidized line to that of the whole line used for "through" business was found to differ so much from the proportion of subsidized line to that of the whole line used for "local" business, as to require the two distinct settlements as made. Expenses, however, having been nearly all paid in coin, some basis had to be agreed upon for their division between "through" and "local" business. In the absence of full data of sundry kinds, "gross earnings" was made the basis. The items composing "real estate," "shops," and "construction" having been entirely omitted from the "expenses" deducted to arrive at "net earnings" subject to the mileage proportion, those items, localized on the subsidized line, were deducted from the proportionate amount of the "coin" net earnings, all of such expenditures having been paid for in coin.

These deductions all made, left the net earnings liable to the payment of five per cent. by the company as follows:

"Local," coin, \$18,333,506.73; "through," currency, \$21,240,269.86; or of the "local" business, coin net earnings nearly 50.40 per cent., and of the "through" business, currency net earnings over 93.16 per cent.; and of the total of "local" and "through" business—coin and currency net earnings—the percentage is over 66.96, or a difference in favor of the government of \$218,238.10, being 5 per cent. of 7.22 per cent. of \$59,068,725.87 of net earnings.

The total amount of net earnings in the government statement is \$17,778,966.36 more than that given in the company's statement. This is principally owing to deductions made from the following items of expenses: "Real estate," "construction," "discount on currency receipts," "leased railroads," and "general expenses."

The total amount of the "five per cent. of net earnings," as ascertained by this bureau, for the government from November 6, 1869, to December 31, 1878, is \$1,978,688.38, or \$745,391.86 *in excess of the company's statement*. The way has been cleared for a better understanding and prompt settlements hereafter. Less than three per cent. per annum on this single item will more than provide for the expense of carrying on this bureau as long as it may be required. The money is all in the Treasury of the United States.

It is proper that I should acknowledge the valuable assistance of Mr. W. F. MacLennan, assistant chief of the warrant division of the Treasury

Department, in making this settlement with the Central Pacific Railroad Company, as well as the courtesy of all the officers of that company.

The condition of the Central Pacific sinking fund is shown in Appendix I of this report. The amount of deposits on that account to June 30 1879, was \$126,594.88, which has been invested in five per cent. United States bonds. Principal, \$121,450; premium, \$5,111.96; leaving a balance uninvested at that time amounting to \$32.92.

Under the operation of the law, it is estimated that the sinking fund will receive for the current year ending December 31, 1879, \$600,000 and that the "five per cent. of net earnings" and "one-half of transportation" to be credited directly to interest paid by the United States will be \$400,000. The extent of railroad operated by this company—some 2,400 miles, of which but 860 are subsidized—reduces the average net earnings per mile to so low a sum that the net earnings on the subsidized line under a mileage *pro rata* less the interest paid on first-mortgage bonds do not reach the amount it was estimated they would when the act of May 7, 1878, was under discussion. This is partly owing to the fact that the company leases and operates nearly 800 miles of Southern Pacific Railroad and connections, which do not earn probably more than one-half of the gross earnings per mile of the subsidized and unsubsidized lines in Northern California, in the San Joaquin Valley, and in and around Oakland. The facts show that prior to the lease of these southern lines by this company the averages for the years 1874 and 1875 were as follows, viz:

Miles operated	1,307.5
Gross earnings per mile.....	\$11,004.5
Operating expenses per mile	\$4,495.2
Net earnings per mile.....	\$6,509.3

And that subsequent to the lease, the averages for the years 1877 and 1878 have been as follows, viz:

Miles operated	2,012.5
Gross earnings per mile.....	\$8,447.7
Operating expenses per mile	\$4,114.2
Net earnings per mile.....	\$4,333.4

The differences being, that the gross earnings are \$2,556.88, operating expenses \$380.93, and net earnings \$2,175.95 per mile less after leasing the southern lines than they were before. If the government "five per cent." is to be on the amount of net earnings ascertained on the basis of mileage *pro rata*, these railroad companies have only to lease enough unprofitable lines, of which they may be themselves the owners, to reduce the government "five per cent.," or "twenty-five per cent." even, to a mere pittance of what it should or will be if the accounts are kept entirely separate and upon a correct and equitable basis, as this office is insisting on being done.

KANSAS PACIFIC RAILWAY COMPANY.

This company owns, leases, and operates nearly 782 miles of railroad 393.9425 of which was subsidized by a loan of United States bonds and 638.6 by a grant of lands. The company having defaulted in the payment of interest on its bonds, receivers were appointed and operate the road from November 21, 1876, to June 17, 1879, on which latter date a formal transfer was made, under an order of the court, by them to E. H. Clark, esq., general manager of the Union Pacific, as the agent of the owners, who also own and control the Union Pacific Railroad.

The report of the railroad engineer accompanying this report gives

The liabilities and assets of the company on June 30, 1879, were follows:

Liabilities.		Assets.	
United States bonds	\$6,303,000 00	Road and equipment.....	\$34,359,54
Interest on United States bonds..	4,018,813 09	Cash	1,307,74
Other bonded debt.....	22,130,100 00	Materials	220,32
Interest on other bonded debt ...	5,621,286 10	Funds with trustees.....	1,827,45
Bills payable.....	084,763 20	Bonds and stocks.....	3,034,49
Accounts payable.....	234,317 12	Bills receivable	8,61
Pay-rolls	394,224 20	Accounts receivable	827,40
Suspense account.....	2,417,475 56	Interest repaid to United States	1,367,58
Trustee.....	376 09	Due from United States.....	1,409,09
Capital stock	9,692,050 00	Land assets.....	340,10
		Funding coupons.....	38,60
		Vouchers.....	5
			41,763,82
		Deficit or debit to income account.	7,605,34
	52,302,185 36		52,392,16

The account of this company with the United States, so far as related to the 5 per cent. of net earnings and the half-transportation compensation withheld, has not been finally adjusted. Appendixes F, G, and give details so far as ascertained.

CENTRAL BRANCH UNION PACIFIC RAILROAD COMPANY.

This company, the successor of the Atchison and Pike's Peak Railroad Company, and, so far as its rights and obligations under the Pacific Railroad acts are concerned, the assignee of the Hannibal and Saint Jose Railroad Company, owns and operates 100 miles of railroad, extending from Atchison to Waterville, which was subsidized by a loan of United States bonds and a grant of land.

In addition to the road owned, the company also operates, under lease, 158 miles of other railroad west of Waterville.

The report of the engineer exhibits the condition of this property. It appears that a good many embankments and cuts are not wide enough; that while the surfacing is inferior, the track is in fair line; that the weight of iron on the first 20 miles is but 50 pounds to the yard, while it should have been 56 pounds in accordance with the standard adopted by the board in 1866; that the masonry work on the line is good, but that the Howe-truss bridges require strengthening. The road runs through a good farming country, well supplied with water and facilities for economical operation. The wonderful results in the business of the road during the last fifteen or eighteen months are attributable entirely to its policy of building extensions or branch roads in various directions. These branch lines are all comparatively new and in good condition. The company has found it necessary to add largely to its equipment, having purchased 20 locomotives and the passenger and freight cars required by its increasing business; with the exception, therefore, of the small amount of equipment originally purchased, which is considerably worn, the road is now well equipped. Miller platform and air-brakes are attached to passenger cars.

In a previous part of this report reference was made to the great improvement of business on this road, and a statement given extending over the last four years.

No report of the earnings and expenses or of the receipts and expenditures of this company for the year ending June 30, 1879, has been received.

subsidized roads shall be completed in sections of 20 consecutive miles before bonds shall be issued. There is room for doubt whether the section including the ferry crossing can properly be considered as 'consecutive,' although it was accepted as such by the examining commissioners. Without doubt a bridge across the Missouri River was contemplated as a necessary part of the branch of the Pacific Railroad system to Sioux City. At the time the road was under construction, estimates were submitted by the railroad company of the probable cost of the road including the cost of the bridge, and a ferry suggested as a *temporary expedient*. Owing to the uncertain character of the river, it is often necessary to change the landing of the ferry on either shore, and at any time its operation may be entirely suspended by some change in the stream. It is very doubtful, however, whether the business of the company, either present or prospective, will justify the construction of a bridge, and, also, whether the probability of recovery to the government of any portion of the subsidy would be increased thereby."

The condition of the road and property in Iowa is fair and fully equal to the requirements of the business, but in Nebraska the road is in poor condition, iron and ties both needing renewal. The new bridges on the lines are in good condition, but the Howe truss of 160 feet span needs immediate renewal. Bridge floors are laid without guards.

The business on the road during the first nine months of the present calendar year shows some slight improvement over that of last year, the figures herewith given indicate:

	Nine months, 1879.	Nine months, 1878.	Increase.	Decrease.
Gross earnings.....	\$260,616 06	\$243,544 78	\$26,071 28	.....
Expenses.....	194,628 59	200,890 47	.....	\$6,261
Net earnings.....	74,987 47	42,654 31	32,333 16	.....

These earnings are for 107.42 miles operated. The interest for nine months on first-mortgage bonds is \$73,260. The amount of mail compensation withheld during the same period has been more than \$6,000 so that, without deducting anything for the 5.84 miles of unsubsidized line, the net receipts are insufficient to pay the interest on first-mortgage bonds.

The earnings and expenditures of this company for the year ending June 30, 1879, are as follows:

EARNINGS.

United States passenger.....	\$900 15	
United States freight.....	1,107 81	
United States mail.....	8,255 88	
		\$10,263
Commercial passengers.....	86,429 46	
Commercial freight.....	246,938 40	
Express.....	3,012 01	
Car service.....	1,139 50	
Miscellaneous.....	5,546 05	
		343,065
Total earnings.....		\$353,329

PAPERS ACCOMPANYING THE

EXPENDITURES.

uses of transportation	\$107,056 2
enance of way.....	99,263 7
enance of rolling-stock.....	27,621 7
enance of buildings and machinery.....	3,964 8
al expenses	15,402 5
<hr/>	
Total operating expenses	
le.....	14,986 2
at on debt, &c	110,625 3
llaneous payments	1,239 8
<hr/>	
Total income expenses.....	
<hr/>	
Total expenditures	
<hr/>	
Not deficit	

the suit of the United States vs. this company, it was the company had no net earnings subject to the payment to the United States, inasmuch as the annual interest on account of first mortgage bonds was in excess of net earnings of the road.

peculiar circumstances affecting this road, especially as ouri River crossing, the comparatively small population of which its business is drawn, its very high cost per mile of land obtained under the land-grant, the refusal of the Pacific Railroad to afford it ordinary business relations, and the slight prospect of its ever earning enough to pay the annual interest on its first mortgage and its subsidy bonds—together amounting to \$195,379.20—result to determine just what is best to do so as to protect the government in it.

I say that the road ought never to have been built on this location does not help the matter. A bridge across the Missouri the ferry is now established will be costly and is not the amount of traffic done; it could not earn the interest. It might be advisable for the company to abandon the Missouri line, to dispose of its line in Iowa to one of the large companies operating at Sioux City or Missouri Valley, and devote its efforts to Northern Nebraska business or a new line through Nebraska from Omaha to opposite Sioux City to Fremont.

Even if such a policy should result in enabling the railroad to pay the interest on its first mortgage bonds, it would not be in the interests of the United States would be immediately apparent. In the course of another decade, should the road be able to pay the mortgage bonds' interest, it is possible that business might be moved as that the United States will begin to receive more than the mere one-half of compensation for mail and other transportation performed. In the mean time it is suggested that the government consider as to how and why this road was built on its present location and as to the actual disposal of the proceeds of the sub-

The liabilities and assets of this company on June 30, 1879, were as follows:

Liabilities.		Assets.	
United States bonds	\$1,628,320 00	Road and equipment	\$5,350,137 74
Interest on bonds	1,073,500 00	Material	46,733 16
First mortgage bonds	1,628,000 00	Cash	42,165 64
Interest on bonds	50,115 00	Company's bonds and stocks	5,000 00
Bills payable	5,000 00	Accounts receivable	7,184 79
Pay rolls and vouchers	33,856 47	Due from United States	102,427 02
Accounts payable	87,426 38	Deficit or debit (balance to income	
Capital stock	2,068,400 00	one-half)	1,020,949 69
	6,574,618 64		6,574,618 64

THE DEFICITS OF THE PACIFIC RAILROAD COMPANIES.

From the foregoing statements of the liabilities and assets of these companies it appears that the balances of deficit, or amounts debited to income account in excess of amounts credited, are as follows:

Union Pacific	\$991,061 27
Central Pacific	7,123,078 52
Kansas Pacific	7,605,362 39
Central Branch Union Pacific	
Sioux City and Pacific	1,020,949 69

These balances should have been on the other side, or at least should not have been so large.

The Union and Central Pacific Companies appear to have large floating debts. Their surplus income, therefore, has not been sufficient to warrant the large investments made in branch lines and kindred enterprises and at the same time the payment of the quite large dividends which have been declared from year to year.

The Kansas Pacific and Sioux City and Pacific deficits are very large in comparison with the amount of capital stock, and are chiefly caused by inability to earn sufficient money to pay the interest on funded debt.

It may be advisable for all of these companies to pay no further dividends until these balances are canceled, or their side investments and floating debt reduced, for the simple reason that borrowing money ostensibly for investment in branch lines, steel rails, &c., is really for payment of dividends to stockholders.

THE RAILROAD CORPORATIONS TO WHICH LAND GRANTS HAVE BEEN MADE.

Of the roads owned by these companies, the Denver Pacific, the larger part of the Burlington and Missouri River in Nebraska, and the larger part of the Southern Pacific—northern division, have been examined by the engineer, to whose report reference is made as to details of the condition of the properties. The Oregon Branch of the Central Pacific—unsubsidized with bonds—is also reported upon by him. The Oregon and California Railroad, and the Oregon Central Railroad, in Oregon, and the Pacific division of the Northern Pacific, were examined by me during the past year.

The location and condition of these roads generally is of a character similar to those already reported on, varying according to the business and financial circumstances and requirements.

The Denver Pacific Railroad is well located and of light grade and

curvature. Road-bed and track are in moderate condition, extensive renewals of ties being needed. Water-stations, buildings, and bridges, and equipment generally, require considerable repair.

The Burlington and Missouri River Railroad in Nebraska, is a well-located road, of such light grades and easy curvature that the ordinary haul of a freight locomotive is from 55 to 65 loaded cars. This accounts for the very low percentage of operating expenses to gross earnings of this company—about thirty (30) per cent. Some steel rail has been laid, and oak ties are altogether used on this road. The bridges are good, well floored, and provided with guard-timbers.

The Southern Pacific, northern division, is that portion of the line owned by this company, which is operated by it, the remainder being leased to and operated by the Central Pacific. The road between San Francisco and San José, on which considerable passenger traffic is done, is laid with 50-pound steel rail, gravel-ballasted, and is in fair condition. The red-wood ties used on the California roads are very serviceable, and but for their softness could not be bettered.

The Oregon Branch of the Central Pacific from Roseville to Redding, 151.7 miles, runs through a good farming country, wheat being the staple product. The bridges and trestles, of which there are a large number, are generally in good condition. Track is principally 56-pound iron, and laid in the old style with joint-chairs. Buildings are ample and in good repair.

The Oregon and California Railroad from Portland to Roseburg, 200 miles, runs through the Willamette Valley and some of the finest parts of the State. The road is in fair condition, and doing an improving business. Twelve miles of trestle-work add quite largely to the maintenance expenses.

The Oregon Central, from Portland to Saint Joseph, 48 miles through a fine farming country, has some quite expensive work on it. The business of the road has not been sufficient to enable it to be kept in necessary repair, but the extension southward fifty miles to Albany giving it more business, the entire road has probably been put in thorough repair this fall. There are many long and high trestles which require attention, the iron in the track is much worn, and large renewals are needed.

The Northern Pacific Railroad, from Kalama on the Columbia River to Tacoma on Puget Sound, and the branch line to Wilkeson were visited during the year. The location of the terminus at Kalama has not been a success, as steamer communication with Portland is required, with the usual delays, changes, and transshipments. The road-bed and track are in good condition, as are also the bridges and trestles on the line. Business of the road is improving, but is light. The country through which the road runs is well timbered and watered, and is as desirable for settlement as any met with in the west, grain and other crops being large and unfailing. The company's coal mines at Wilkeson are being profitably worked, but the coal is of an inferior quality. Recent discoveries of extraordinary seams of excellent bituminous coal in the immediate neighborhood of the company's mines give hope that the business of the road will largely increase in the future.

The Visalia division of the Central Pacific and the leased lines south of Goshen, aggregating 924.25 miles of railroads, are in good condition. Under the same general supervision and system as the main line of the Central Pacific, these roads are more than equal to all that may be required of them. Portions of the road have been of an expensive character, especially those over and through the Tehachapi and the San Fernando Mountains. Hundreds of miles of the country are desert, of the

CONDITIONS AS TO GOVERNMENT TRANSPORTATION.

The most important question for consideration in regard to these railroads is that of the conditions attached to the land grants, and whether the government is receiving the full benefit of those conditions. Appendix E gives a full list of these conditions and the names of the companies to which they attach.

In the major portion of these railroads the government is entitled to the use of the road "free from toll or other charge upon the transportation of any property or troops of the United States." On many of them transportation of troops and property of the United States is to be free of all cost or charge when so required by the government; on others, fair and reasonable rates may be charged, not to exceed amounts paid by private parties for the same kind of service; in many of them Congress has reserved the right to fix the price to be paid for carrying the mail; and in some others Congress has reserved the right not only to fix the rates for government transportation, but all rates that the companies may charge.

In my last Annual Report, pages 28 and 29, and Appendix L, page 59, these questions were discussed at some length.

In the particular cases of the roads upon which the condition is that the government shall have "the use of the road free from toll or other charge," it was stated that upon a certain showing the average value of this condition to the government was equal to a deduction of over 44 per cent. from tariff rates. There are thirty-eight railroads in the United States subject to this condition on government transportation, aggregating 6,000 miles of track. Supposing that government transportation on these roads at tariff rates be \$600,000 per annum—perhaps too low an estimate—and the deduction for the value of this right should be fixed at 20 per cent. from tariff rates, as was proposed in the interest of these railroads, the government would pay \$480,000 annually in money; whereas if the deduction on the principles of justice and equitable remuneration to the companies is found to range all the way from 40 to 60 per cent. from tariff rates, as it is believed it will be found, the government would have to pay but \$300,000 annually in money, equal to a saving of \$180,000 per annum to the government.

With a view to still further elucidate the bearings of railroad practice upon this important question, a table has been prepared and is given as Appendix L in this report, showing the conditions upon which nearly 5,000 miles of leased railroad are operated. The roads have been taken from all parts of the country, wherever the necessary data and information could be found sufficiently explicit.

Average is of as little account in settling the price to be paid as rental of a leased line as it is in fixing the rate or amount of deduction to which the government is entitled in the cases in question.

One of the averages, namely, that showing the cost of maintenance of way, is of use to a certain extent, inasmuch as it shows how much the railroad companies pay for maintaining road—an expense not entering into the calculation of cost of doing transportation for the government, as the companies are required to maintain the road whether the government should use its own rolling stock or that of the companies, but only into what it costs the respective companies as rental of road.

Now, this rental of road in many cases is exactly the amount of deduction to which the government is entitled. For instance, the Pittsburgh, Fort Wayne and Chicago is leased by the Pennsylvania Company; length of road, 468 miles, of which 466 is steel rail, largely reducing

the cost of maintenance of way, which is but 11.81 per cent. of gross earnings. Gross earnings for 1878, \$7,830,109; amount paid by lessees to lessor as rental, \$2,262,236; added to \$54,084, amount expended in maintenance of way, makes \$3,116,320, amount paid by the Pennsylvania Company for the use of the road, which is forty-three and nine-one-hundredths (43.09) per cent. of the gross earnings. Or, to take a Western road, the Atchison, Topeka and Santa Fé Company leases five branch roads, as shown in the appendix, aggregating 336.92 miles. The gross earnings of these lines are \$1,063,617 for 1878; amount expended by lessee in maintenance of way is \$235,664, or 22.15 per cent. of the gross earnings; amount paid by lessees to lessors, \$364,734, or 34.29 per cent. of gross earnings; together amounting to \$600,374, or 56.44 per cent. of the gross earnings, being the value to the lessors of the use of their roads operated under lease by the Atchison, Topeka and Santa Fé Company, the lessee.

Another instance of an entirely different character is that of the Cincinnati Southern Railway, owned by the city of Cincinnati and operated by the Cincinnati Southern Railway Company under contract with the trustees. The Cincinnati Southern Railway Company is a common carrier company, with a paid-up capital stock of \$261,895, of which \$247,014.89 was invested in equipment on June 30, 1878. The carrier company operates the road, paying out of gross earnings (1) current operating expenses, (2) all damages or liabilities and other expenses, including taxes incurred and paid by said company on its capital and personal property used in operating the railway, (3) monthly to said company such sum as shall amount to seven per centum per annum on its paid-up cash capital, and (4) the balance to the trustees as rent. The length of road operated is 158.30 miles; the gross earnings for the year 1878 were \$506,180; the amount received by the trustees was \$281,508, or 55.61 per cent., from which they are required to pay for maintenance of way. The road being a new road and well built, these expenses must be light for some years to come.

From these examples it is very evident (1) *that no one fixed rate of deduction can possibly be equitable for all of these companies, and* (2) *that the deduction for the use of a railroad free of toll or other charge by the United States, by which it is understood that the company must keep the road and its appurtenances in repair, should certainly not be less than the rental which such a railroad is worth to its owners.*

THE TABLES ATTACHED TO THE REPORT.

The tables placed after the appendixes show (1) organization, (2) ownership, (3) officers, (4) characteristics of road, (5) cost, (6) funded debt, (7) financial condition, (8) receipts, (9) expenditures, (10) operations of land departments, and (11) comparative statements of earnings and expenses of all the companies reporting to this office so far as the information affords.

RECOMMENDATIONS AS TO LEGISLATION.

The following recommendations for legislation to remedy defects in present laws, to promote the welfare of these railroads, and to protect the government in its interests and rights, are respectfully submitted:

First. That the act of Congress approved May 7, 1878, entitled "An act to alter and amend the act entitled 'An act to aid in the construction of a railroad and telegraph line from the Missouri River to the

Pacific Ocean, and to secure to the government the use of the same for postal, military, and other purposes, approved July first, eighteen hundred and sixty-two, and also to alter and amend the act of Congress approved July second, eighteen hundred and sixty-four, in amendment of said first-named act," be amended (1) so as to authorize the sinking-fund to be invested in the first-mortgage bonds of the respective companies named therein, or such United States bonds as the Secretary of the Treasury may prefer, and (2) so that the date of payment of the additional amount required under section 4 be changed to the first day of April in each year, and (3) that the settlements and payments for the sinking-fund be required to be made semi-annually instead of annually.

(In support of these amendments, it is urged, as to the "first-mortgage bonds" investment of the sinking-fund, that they pay *six* per cent. interest—the present investment paying only five per cent.; that the premium is but about ten per cent., while that of the United States five per cents. has been over five per cent.; that they are coequal with the United States subsidy bonds as to maturity; that the first-mortgage bonds of the companies are *first* to be paid by the accumulated sinking-fund; and that when these first-mortgage bonds are paid the United States bonds become a first lien on the property. If this should not be authorized, authority should at least be given to invest the fund in the United States subsidy or other United States bonds. These railroads find it necessary to aid or build branches and extensions in order to protect the trunk-line business, upon which mortgages are made and bonds issued. The companies propose that in lieu of the actual cash payments now required to be made by them into the sinking fund, the first-mortgage bonds of these branch lines be accepted at par for the sinking fund. If these bonds pay six per cent. interest, are guaranteed by the trunk-line company, and are issued to an amount of *actual cost*—say, not over \$7,000 or \$8,000 per mile of railroad—they certainly must be quite as valuable a security as the first-mortgage bonds of the trunk-line, which were issued to an amount of nearly \$26,000 per mile, and their branch-line bonds will be much more profitable for the sinking fund.

As to the change of date of payment, it is found that one month between the close of the year's business and the date of payment is insufficient time wherein to settle their accounts for the year by the companies themselves, the transportation accounts by the accounting officers of the Treasury, and for this office afterwards to examine both accounts and report the amount due under the law.

As to the semi-annual settlements proposed, it is urged that they would accommodate themselves to the fiscal year of the United States; that they could be much more easily effected; and that the sinking fund would be considerably benefited by the more frequent payments.)

Second. That sinking funds be established in the Treasury to provide for the ultimate payment of the indebtedness of the Kansas Pacific, Central Branch Union Pacific, and Sioux City and Pacific Railroad Companies upon the same basis as those for the Union and Central Pacific Companies.

(In urging this legislation it is believed that in no other way can the interest of the government in these roads be protected. The business of all of them is improving to such an extent, especially that of the two first-named, that no difficulty as to their ability to make such payments is anticipated. The five per cent. of net earnings and one-half of transportation on these roads are altogether out of proportion to any practical

reimbursement of either the principal or accumulating interest of the government loan.)

Third. That the act of Congress, approved June 19, 1878, entitled "An act to create an Auditor of Railroad Accounts, and for other purposes," be amended (1) by changing the title of the office to "Commissioner of Railroad Affairs"; and (2) by requiring the several departments of the government to transmit the accounts of the five subsidized Pacific Railroad Companies for transportation services of every kind, including the mails, through this office, to the respective accounting officers of the Treasury, and that all disallowances or differences in the said accounts found by the accounting officers upon settlement be reported to this office before final payment or allowance of the same; and (3) that this office report to the Treasury Department what changes, if any, are required in the payment or disposal of the moneys so found to be due to the said companies.

(Inasmuch as many other duties than those connected with the accounts of the railroad companies are imposed upon this office relating to the property and affairs of the companies generally; that the bureau officers of the Interior Department are so called; and that there is some misconception as to the functions implied in the title as well as confusion as to which department, the Treasury or the Interior, the bureau is located in, it is believed that the change of title recommended is advisable.

As to the legislation recommended requiring the transportation accounts of the companies to be transmitted through this office, it is considered absolutely indispensable to a correct knowledge of the condition of the whole account between these companies and the government. If such accounts are not reported and consolidated in this office, they certainly should be in some other, otherwise it is impossible to know their condition from time to time.)

Fourth. That the acts of Congress of July 1, 1862, and July 2, 1864, creating the Union Pacific Railroad Company and authorizing the Pacific Railroad to be built, be amended so that any company which may have already abandoned or which may hereafter abandon any portion of its subsidized line of railroad, or which may divert through-mail, through-passenger, or through-freight or other traffic of any kind from the subsidized line of railroad to a new or other unsubsidized line of railroad, shall be required to substitute for the lien and conditions as required for the security of the United States on the subsidized line, like lien and conditions on the new or other unsubsidized line; otherwise, that all such traffic aforesaid of every kind shall be required to be done and retained only on the subsidized line; and (2) that this office be empowered to require bridges and other structures to be put into proper condition so as to insure safety of travel upon these lines of railroad.

(Section 18 of the act of Congress approved July 1, 1862, above referred to, authorizes these amendments to be made if necessary.

It reads:

"And the better to accomplish the object of this act, namely, to promote the public interest and welfare by the construction of said railroad and telegraph line, and keeping the same in working order, and to secure to the government at all times (but particularly in time of war) the use and benefits of the same for postal, military, and other purposes, Congress may at any time—having due regard for the rights of said companies named herein—add to, alter, amend, or repeal this act."

These amendments are believed to be strictly in compliance with the provisions of the above-quoted section. If a company has the right to abandon one mile of the subsidized line, it may abandon the whole road;

if it has the right to deprive the government of its proportion of transportation for the reason that it is not performed on subsidized line as to *one mile* of road, it may deprive it of all by diverting the through mails and other business to any new or other unsubsidized line it may build or purchase. The questions involved are serious and important, and it is believed that the time has arrived for some positive legislation on the subject.

It is simply to promote the public interest and welfare that the authority is asked for to require the companies to maintain their bridges and other structures in good and safe condition. The numerous bridge accidents that are occurring, and the uncertain condition of many old bridges on the Western railroads generally, seem to require particular caution in this regard now and hereafter.)

Fifth. That all acts of Congress which require the Secretary of the Treasury to withhold payment for services from the Pacific Railroad Companies be repealed; that all moneys in the Treasury belonging to the Pacific Railroad Companies, being the amount in excess of one-half compensation for services withheld and applied to the payment of interest by the United States, be made applicable to the payment of the "five per cent. net earnings" found to be due by them, respectively, or into their respective sinking funds; and that provision be made hereafter so that the accounts of these companies for services performed may be promptly settled and disposed of by payment of the amounts into the Treasury if the companies are legally indebted to the United States, or to the respective companies if they are not legally indebted to the United States.

(The recent decisions of the Supreme Court having laid the foundation for final adjustment of the five per cent. and other accounts of these companies, before these final settlements can be effected it is necessary that the restriction as to the payments for government transportation be removed and provision made for a proper disposal of the same.)

Sixth. That the time for the completion of the Northern Pacific Railroad be extended five years from July 1, 1879.

(This company is going on with its construction at both ends of the line, and expects to have two to three hundred miles additional railroad opened for use by the summer of 1880. It is anticipated that the general improvement in business will enable this company to carry to a successful completion this great northern line to the Pacific. The people of Oregon and Washington Territory, the great Northwest of the Pacific coast, desire more direct means of communication with the Eastern States. The company's affairs are in good condition and under good control.)

Seventh. That the several departments of the government be authorized and required to enter into annual contracts with all subsidized and land-grant railroad companies for rates of passenger and freight transportation.

(This is recommended in order for the government to obtain service on these railroads at the very lowest rates that are paid by any private corporation or person. In many instances, it is believed, the government is paying the very highest tariff rates, when the records of the companies show that both passengers and freight must have been carried for prices much below those paid by the government.)

Eighth. That the rate of payment for mail service on the several railroads which received land grants upon, the condition that Congress might

fix the same, be reduced to a merely nominal sum, or the actual cost of performing the service.

(It is found that many of these railroads have received and are still receiving millions of money as the proceeds of sales of granted lands, and that the government is in no way directly benefited by the grant. If a company has received as proceeds of such land, say one million dollars (\$1,000,000), and the ordinary compensation for mail service as allowed by the Post-Office Department is \$75,000 per annum, it would be but equitable for some deduction to be made therefrom on account of the real money value of those proceeds; at 5 per cent. per annum the deduction would be \$50,000. The railroad companies should not complain, as it is part of the contract under which the lands were accepted. The people, through the government, would be greatly benefited by reduced cost of mail transportation. If a railroad company is receiving such large sums as proceeds of lands that it can afford to make quite large dividends from that source to the stockholders, there is no reason why the conditions should not be conformed to in such cases.)

Ninth. That section 13 of the act approved July 27, 1866 (14 U. S. Stat. at L., p. 297), as far as the same relates to reports to be rendered by the Atlantic and Pacific Railroad Company to the Department of the Interior, be repealed.

Tenth. That section 13 of the act approved March 3, 1871 (16 U. S. Stat. at L., p. 577), relating to reports to be made by the Texas and Pacific Railway Company to the Department of the Interior, be repealed.

THE PERSONNEL AND EXPENSE OF THE OFFICE.

The following-named persons were employes of this office on June 30, 1879:

Theos. French, Auditor.....	annual salary	\$5,000
Southwick Guthrie, bookkeeper.....	do. do.	2,400
August Duddenhausen, assistant bookkeeper.....	do. do.	2,000
Wm. C. Pennywitt, clerk.....	do. do.	1,400
Wm. F. Ryan, copyist.....	do. do.	750
Bratford Whiteley, messenger.....	do. do.	300

On this day, November 1, 1879, the personnel is as follows:

Theos. French, Auditor.....	annual salary	\$3,600
Southwick Guthrie, bookkeeper.....	do. do.	2,400
Aurin B. Nichols, railroad engineer.....	do. do.	2,000
August Duddenhausen, assistant bookkeeper.....	do. do.	2,000
Miss E. W. Rogers, clerk.....	do. do.	900
Albert S. Seely, copyist.....	do. do.	600

Of the appropriations for this office for the fiscal year ending June 30, 1879, in all amounting to \$14,400, the following sums have been expended, viz: Salaries, \$11,691.93; traveling and incidental expenses, \$2,524.17; in all amounting to \$14,216.10.

The appropriations for the office for the current fiscal year ending June 30, 1880, are as follows: "Office of Auditor of Railroad Accounts—For auditor, \$3,600; bookkeeper, \$2,400; assistant bookkeeper, \$2,000; railroad engineer, \$2,000; one clerk, \$1,400; one copyist, \$900; traveling and other expenses, \$1,500; incidental expenses, \$250; in all \$14,050." This is \$350 less in all than the amount originally appropriated by the act of Congress creating the office.

The estimates which have been submitted for the fiscal year ending June 30, 1881, are as follows: For Auditor, \$5,000; railroad engineer,

given to the lines which have received *bonds* than to those which have only been aided with land grants.

In criticising the condition of these roads, regard should be had to the climatic conditions to which they are subjected. In the vicinity of the Missouri Valley, in Eastern Kansas and Nebraska, there is a good annual rainfall, distributed with more or less regularity over the entire year. This rainfall decreases in amount and regularity as we go west. On the high plains, at the foot of the Rocky Mountains, and throughout the desert, the annual precipitation is small in amount, and very irregular in occurrence. Throughout this whole region, what are locally called "cloud-bursts" are frequent, rendering necessary in many places large water-ways, where, in ordinary practice, small culverts would be sufficient. Over the lines of main drainage bridges are also required although the streams are dry for a greater portion of the time. This is the region of high winds, and dry, drifting snows, rendering necessary the use of snow-fences and snow-sheds of sufficient strength to withstand the wind-pressure, tightly boarded up.

On the Sierras the snow is of a moister character, and accumulates in large masses on the mountain sides, to resist the weight and sliding pressure of which, a strong gallery, well anchored, is necessary. In the region west of the Sierras the rainfall is *mainly* confined to two months in the year, and the rivers are subject to heavy floods, making it essential to provide extraordinarily large water-ways, and extensively to rip-rap embankments.

In the region between the Missouri River and the Rocky Mountains the area of regular rains appears to be gradually extending westward and the amount of rain gradually increasing. General Fremont, in exploring the country, found the sage-bush in the vicinity of Greenleaf (Central Branch Union Pacific Railroad), and near Carlyle (Kansas Pacific). During the recent trip over these roads none was seen on the Central Branch Union Pacific Railroad at Gaylord, 114 miles west of Greenleaf, and it was first seen on the line of the Kansas Pacific, 10 miles west of Carlyle. The Chief Signal-Officer of the War Department, in his annual report, 1878, notes the large increase of rainfall at North Platte station, on the Union Pacific Railroad. I am told that in Peru rain has fallen on the line of the railroad, where, previous to the construction of the road, none occurred. To illustrate the climate of the region through which the railroads under consideration pass, I have appended tables 1, 2, 3, 4, and 5, showing the elevations above sea level, and the annual rainfall and mean temperature for two different years.

The temperature and rainfall are taken from the reports of the Chief Signal-Officer, and the elevations are chiefly from Mr. Gannett's compilation for Professor Hayden's survey.

In going to and coming from the west, the following-named lines east of the Mississippi River, were passed over, giving an opportunity of comparing the condition of the subsidized roads with some of the important eastern lines:

The New York Central and Hudson River Railroad, a part of the Lake Shore and Michigan Southern Railway, the Wabash Railway, the Chicago, Burlington and Quincy Railroad, the Pittsburgh, Fort Wayne and Chicago Railway, and the Pennsylvania Railroad.

THE UNION PACIFIC RAILROAD.

This company owns a line from Council Bluffs, Iowa, to junction with the Central Pacific Railroad, 1,038.46 miles (Major Twining's remeasure-

ment), 5 miles of which are leased to the Central Pacific Company, leaving 1,033.46 miles from Council Bluffs to Ogden, Utah Territory, operated. The line is single track, and for about 500 miles, at its eastern end, lies in the valley of the Platte River and its tributaries, in an open bottom-land and prairie country, crossing but few streams requiring extensive bridges. The maximum grades in this portion of the line are, going west, over the peninsula between the Missouri and Platte Rivers, 67 feet per mile, and 35 feet per mile in the Platte Valley; going east, from Cheyenne to Omaha, 516 miles, the line was originally laid with maximum grades of 42 feet per mile in the Platte Valley, and 79 feet per mile over the peninsula. In the valley the grades going east are short, and most of them occasioned by following closely the rolls of the plain. Some of these short grades have been taken out since the road has been in operation. The maximum curve on this portion of the line is 4° , and 90 per cent. of the distance is tangent.

Between Cheyenne and Laramie, 57 miles, the line passes over the southern end of the Black Hills, reaching at Sherman (according to the company's profile) an elevation of 8,242 feet above the level of the sea. The maximum grade going west, on this portion, is 80 feet per mile, and going east, 91.5 feet per mile. The maximum curve is 6° , and about 60 per cent. of the distance is tangent. Between Laramie and Piedmont, 356 miles, the line is undulating, with maximum grades of 66 feet per mile going west, and of 64.5 feet per mile going east. The maximum curve is 6° , and 75 per cent. of the distance is tangent. Between Piedmont and Ogden, 104 miles, the line passes the Wasatch Range, with maximum grades of 62 feet per mile going west, and 91 feet per mile going east. The maximum curve is 6° , and 35 per cent. of the distance is tangent. The line has been changed and improved in places since the road has been in operation, and there still remain places where improvements might be made in line, or grades, or both.

A great portion of the line is a low embankment, formed by throwing up earth from the sides, and in the bottom-lands and plains, following the undulations of the ground very closely. In crossing the Black Hills and at several other points, some heavy work has been necessary. A large amount of work has been done raising the road out of shallow cuts in order to prevent snow blockades. In some cases it has been thus raised as much as six feet. I am not in possession of data as to the total amount of this work done up to date, but am informed that over fifty miles have been done on the Laramie division alone.

On the eastern division—Council Bluffs to North Platte—the cuts and embankments generally are of good width. West of North Platte over 50 per cent. of the embankments should be widened. In many places they are not wider than the length of the cross-ties. The high winds on the plains blow the tops of the embankment away in the form of dust in dry weather. This difficulty will be obviated to a great extent when the line is properly ballasted. Near the coal mines the company has widened a number of embankments with the refuse from the mines, a material which is not affected by the winds. Some of the cuts are a little narrow. The tunnels are four in number, all short. Tunnel No. 1 has been partially arched during the past year with old rails laid longitudinally on ribs formed of old rails riveted together, these ribs resting on wrought-iron columns anchored into the sides of the tunnel. The company proposes to replace the timbering in tunnel No. 2 with a similar construction. Tunnels Nos. 3 and 4 are in rock sufficiently solid to require no arching. These tunnels are all excavated for a single line.

The masonry under the iron bridges is good, much of it having been rebuilt. Where old masonry has been retained, it has been repaired. The masonry in box and arched culverts is not, as a rule, first class. It is the original contract masonry put in when the road was built. A large number of these culverts has been removed by wash-outs, or otherwise, and pile bridges substituted.

For about 40 miles immediately west of Cheyenne the road is ballasted with the decomposed granite of the Black Hills. At several other points there are short stretches of gravel ballast. Generally, however, the road is maintained with earth thrown out of the ditches. In dry weather a good track can be kept up with this material, but it is very dusty and disagreeable to travelers and soon succumbs to wet weather.

For about 110 miles west of Omaha, the ties are nearly all oak; west of this, soft wood. The ties are of irregular lengths and not laid in line at either end. In general, there is a sufficient number in the track and where this is not the case, it is under old iron, where renewals must soon be made. East of Sidney a good many ties need renewing. Elsewhere the ties are in fair condition, large renewals having been made. At the present time the company reports 460 miles of track laid with steel rail. At the close of 1878 there were 283 miles, showing that 177 miles have been relaid with steel during the present year. The weight of steel used is 56 pounds and 58 pounds per yard, chiefly the former. I think a heavier section would have been better in view of the increasing business and the heavy character of the rolling stock.

As an illustration of the general practice, in this respect, on the principal roads of the country, I have compiled the following table:

Table showing weight of steel rails used by different companies.

Name.	Wt per yard.	Name.	Wt per yard.	Name.	Wt per yard.
	Lbs.		Lbs.		Lbs.
Boston & Albany	63	Pennsylvania Railroad, ..	67	Michigan Central	56
N. Y. Central & Hudson R.	65	Delaware, Lackawanna & W.	60-68	Chicago, Burlington & Q.	
N. Y., Lake Erie & Western,	63	Pgh., Ft. Wayne & Chicago	60	Chicago & N. Western ..	
N. Y., N. Haven & Hartford,	62	Pgh., Cin. & St. Louis.....	60	Chicago, R'k I'd & Pacific	
Lehigh & Susquehanna	60-62	Lake Shore & Mich. S.....	60	Chicago, Mil. & St. Paul..	56
Lehigh Valley	64	N. & O., Chicago div	64	Kansas Pacific	
Philadelphia & Reading...	68	Ohio & Mississippi.....	60	Central Pacific (standard).	

There is a good deal of the original iron, laid when the road was built, still in the track, much of it laid with the old style of joint-chair. Between Cheyenne and Valley there is a large quantity of iron which needs immediate renewal, for a portion of which provision has been made. The present standard splice is what is known as the "Samson joint," with the addition of a wrought sleeve-chair laid directly under the joint. Some of the steel, and the rerolled iron has been laid with the plain double fish-splice, and, as above noted, there is a large number of old joint-chairs in use.

On that portion of the eastern division where old iron is still in use the spiking is deficient in places; elsewhere it is generally good. On this portion of the road, also, the line and surface of track are inferior. On the rest of the road the surface and line are, as a rule, good. There are

however, a number of curves and some tangents which should be trued up with an instrument, reference points set, and trackmen required to line the track to them.

The sidings, outside of the "yards," are usually laid *wide* of the main track, and pass behind the station buildings. In some instances the curves leading into the sidings could be lightened without decreasing the standing-room, rendering it much easier for locomotives to get out with a heavy train. In some cases, also, at stations, by using three-throw, or four-rail switches, the number of switches in the main track could be decreased. The length of sidings now in use is 194.7 miles. The cast frogs, as fast as they wear out, are being replaced by frogs made of steel rail. The switches are "stub," with upright lever switch stands, and levers provided with targets. The switches are not lighted, but all trains are required to "slow up" on approaching them. The road is not provided, either with mile-posts, or danger-boards at road-crossings. There is, in fact small need for the latter, except in towns. Only a small portion of the road is fenced, the company finding it more economical to pay for stock killed than to keep up the fences. In this region, where firewood is not found, and coal is dear, it is a difficult matter to keep fences in repair! The company proposes using the barbed wire fence, with iron posts, and a wooden rail on top, placed there to make the fence visible to stock.

The telegraph line appears to be in good working order.

The company now has in use and in process of erection, seventeen (17) iron bridges, nine (9) of them new this year. The new bridges are all wrought-iron structures. A number of trusses have been designated for renewal with iron next year. This will leave a few still to be provided for. The pile and trestle bridges are generally in good condition. A few need renewal, and some require ordinary repairs. A good many of the original openings have been filled up, and in other places new openings have been made as circumstances have required. Pile bridges are now maintained in many places where culverts have been washed out. This is, without doubt, at present a correct practice, both on the score of economy and safety. The bridge floors would be improved, and safety, in case of derailment, promoted, by timber guards laid outside of the rails, securely fastened, and notched down, so as not to interfere with snow-plows.

The new terminal station at Council Bluffs is of brick. It contains office accommodations for station-officers, waiting-rooms, a commodious baggage-room, and excellent, though limited, hotel accommodations. The passenger platforms should be covered with sheds, and separate ticket-windows provided for women. The building is well supplied with fire-hose and water. Under the same management with the depot hotel is an emigrant hotel, where travelers of this class are provided with good, plain accommodations at low rates, and assistance is given them in procuring tickets, checking baggage, &c.

The brick station at Omaha needs some repairs. The building seems to be large enough for present purposes. The station buildings out on the line are wooden structures (in many places a dwelling and station combined), and, so far as a somewhat hasty examination indicated, are generally in good repair. Hotels and eating-houses are provided at various points, and are sufficient in number for the trains as run at present. The temporary buildings at Ogden should be removed and an entire re-arrangement of station buildings and yard made, such as would properly accommodate the business of the several roads center-

ing there. The general office building at Omaha is a plain, substantial, and commodious brick structure. The water stations are in ordinary good condition, no more than the usual amount of repairs being required. The new tanks are all of the "frost-proof" pattern, on cast-iron columns, set on stone foundations. The water supply is the "best the country affords," which in some places is neither ample nor good. Deficiencies are supplied by hauling water from well-supplied points. The windmills and steam-pumps are well maintained.

Coaling stations at principal points are provided with pockets and chutes for coaling locomotives.

The engine-houses and nearly all of the shop buildings are of brick or stone. Some additional shop-room has been provided in frame buildings. With the exception of ordinary repairs, the buildings are in good condition. The shops at Omaha are very much crowded. At other points the facilities are ample. The shop buildings are well supplied with fire-service. Turn-tables are of cast-iron, in masonry pits.

The snow-sheds were undergoing annual repairs at the time of inspection. Some of these structures are getting old, and when renewed, a more workmanlike-looking design is recommended. Snow-fences were also undergoing the annual preparation for winter.

The policing of the road is open to criticism. A good many of the ditches need clearing, and in general, the road-bed is not maintained to any definite shape or width, and weeds and grass are allowed to grow close up to the ends of the ties. At some of the principal stations the platforms and tracks are not kept clean, and the substitutes for water-closets are not properly attended to.

The rolling-stock is in good condition. The passenger equipment is provided with Westinghouse automatic brake and Miller platforms. The road is well supplied with machinery for maintenance of way purposes, such as pile-drivers, steam-plows and scrapers, and unloading machines, snow-plows, and track-flangers. Considerable ingenuity has been displayed in these labor-saving appliances.

In addition to exercising its proper functions, the company owns and operates coal mines at Carbon, Rock Springs, and Evanston, and a rolling-mill at Laramie capable of turning out 55 tons of iron per day with "one turn." This mill is now used for rolling iron for branch lines.

Branch lines.

A hasty examination was made of the Colorado Central Division, and of the Utah Central and a portion of the Utah Southern Railroads. These roads, while not subsidized, are important as feeders to the main line, and as such are of interest.

The Colorado Central consists of a standard gauge single-track line running from Colorado Junction, six miles west of Cheyenne, via Golden, to Denver, Colorado, and of a narrow-gauge single-track line running from Golden up the cañon of Clear Creek to Central City, with a branch to Georgetown.

Both lines are badly located in detail. On the narrow-gauge system grades are over 200' per mile, and the maximum curve unknown. Improvements are in progress on this part of the line, the alignment being revised and grades eased in places, iron replaced with 50-lb. steel, surface and line of track trued up, and some ballast put in. The narrow-gauge rolling-stock is in good condition. The line was originally stocked with six-wheel connected engines, without front trucks. They are now being supplied with pony trucks as fast as possible.

The buildings, while not elegant, are good enough for the purpose. The business of this part of the road is exclusively with the mining districts, and is good. Surveys have been made during the past season for extensions beyond Georgetown.

On the standard gauge line the road-bed is generally narrow, and bridges need considerable repairs.

Road is laid with 56-lb. iron, with plain double fish joint, and is not ballasted. Ties are soft wood. Buildings are large enough for the business, are in fair condition, and neatly kept. Rolling-stock is in good condition. Passenger-cars have Westinghouse automatic brake and old-style coupling.

The Utah Central and Utah Southern, as far as examined, are operated at very low rates of speed, are built through a very dry country, and, although not in first-class condition, appear to be sufficiently well maintained and equipped. The Utah Southern is rapidly being extended south. These lines form an outlet for the entire Salt Lake Valley south of Ogden, and will undoubtedly be important feeders to the main line.

CENTRAL PACIFIC RAILROAD.

On the 30th June, 1879, this company owned main line and branches as follows, viz:

	Miles.
Junction Union Pacific to Sacramento.....	732.45
Western Division and San José Branch	151.17
Alameda Local.....	9.98
Oakland Local.....	5.66
Visalia Division	146.08
Oregon Division	152.22

1,203.56

And leased:

Union Pacific	5.00
Southern Pacific	550.81
Western Development Company	0.13
Southern Pacific of Arizona	182.72
Los Angeles and San Diego.....	27.82
Los Angeles and Independence.....	16.60
Sacramento and Placerville	5.64
Stockton and Copperopolis	44.65
Amador Branch.....	27.05
Berkeley Branch	3.83
Northern Railway	95.82
California Pacific	113.37
San Pablo and Tulare	46.52

1,120.05

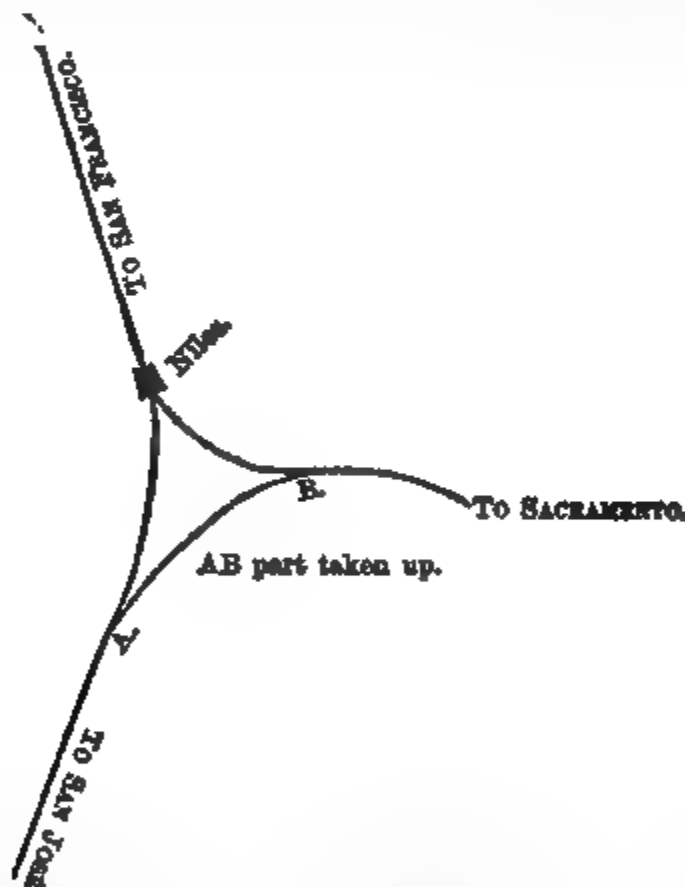
Total operated 2,323.61

Total length of side tracks June 30, 1879.....	274.63
Of which there were on lines owned	182.79
And on lines leased.....	91.84

Of the lines owned the following portions are subsidized, viz: The Central Pacific proper, W. P. Junction to San José, 860.66 miles, bonds, lands, &c., and the Oregon Division (formerly California and Oregon), Roseville to Redding, 152.22 miles, with lands, &c. Of the lines leased, the Southern Pacific, 550.81 miles, is subsidized with lands, &c. The following description in connection with the accompanying map will show the growth of the Central Pacific's system in the vicinity of San Francisco.

The line from the junction with the Union Pacific was opened to the public May 29, 1869. The Western Pacific Railroad was consolidated with the Central Pacific June 23, 1870. On September 1, 1869, the Central Pacific leased 5.64 miles from Sacramento to the junction with the Western Pacific at Brighton, from the Sacramento and Placerville Railroad Company, and the line was opened to San José September 15, 1869. The San Francisco Bay Railroad Company was chartered July 25, 1868; was consolidated with the Western Pacific Railroad Company November 2, 1869, and opened the line from Niles to San Francisco about December 1, 1869.

By leasing the line of the Sacramento and Placerville from Sacramento to Brighton, and running trains via that route, that portion of the Western Pacific subsidized line between the American River junction and Brighton, about three miles, was abandoned as main track, and has since been only used for storing cars. On the opening of the road from Niles to San Francisco it at once became a part of the main line, and that portion of the subsidized route from Niles to San José was henceforth used only as a branch road. As a consequence of this arrangement, a portion of the subsidized line forming the third side of the triangle at Niles was abandoned and the track subsequently taken up. (See sketch.)



On June 30, 1874, five miles were leased from the Union Pacific Railroad Company from Ogden to the Junction; the Northern Railway was leased July 1, 1876, and upon the completion and lease of the San Pablo and Tulare Railroad, November 8, 1878, the present main line was established, viz:

	Miles.
Ogden to Junction, Union Pacific Railroad.....	5.0
Junction to Sacramento, Central Pacific Railroad (Major Twining's remeasurement)	738.45
Sacramento to Brighton, Sacramento and Placerville Railroad.....	5.64
Brighton to Tracy, Central Pacific Railroad.....	62.30
Tracy to Martinez, San Pablo and Tulare Railroad.....	47.61
Martinez to West Oakland, Northern Railway.....	29.75
West Oakland to Oakland Wharf, Central Pacific Railroad.....	2.20
Oakland Wharf to San Francisco, Central Pacific Ferry	3.69
Total, Ogden to San Francisco.....	894.64

This route is about eleven miles longer than that via Niles, but avoids the heavy grades near Livermore.

More recently the Northern Railway has been built from Benicia (on the strait opposite Carquinez) to Fairfield, on the California Pacific (leased July 1, 1876), and is now nearly ready for use. When this line, with its accompanying ferry, is completed, the through business will be turned over to it, and the main line will then be—

	Miles.
Ogden to Sacramento	743.45
Sacramento to Fairfield, California Pacific Railroad	39.80
Fairfield to West Oakland, including ferry at Benicia	44.33
West Oakland to San Francisco, including ferry	5.89
	833.47

This arrangement, while decreasing the length of the through line, reduces all that part of the subsidized line west of Sacramento to the condition of a branch road.

Condition of line between Ogden and San José.

The line is laid with maximum grade of 116.2 feet per mile going east, and 105.6 feet per mile going west, both on the Sierras. East of the Sierras the maximum grade is 75 feet per mile going east, and 95 feet per mile going west. The maximum curve is 10°; road is single track. As a consequence of the extreme haste in which the road was built, and also of allowing economy of first cost to override all other considerations, it is in places improperly located, and has grades badly adjusted. In a few places the line has been changed since the road has been in operation. A few of the cuts need widening, but generally they are of good width. Embankments here and there need widening. This work, however, is being gradually accomplished.

The tunnels are seventeen (17) in number, with an aggregate length of 8,102 feet. Of these, one (1) is lined for 529 feet of its length with rubble masonry, and ten (10) are lined, some partly and some wholly, with timber to an aggregate length of 3,468 feet. This timbering should be replaced with masonry. The tunnels are all excavated for single track.

Where masonry is used under bridges it is generally of good quality. In a few places it needs rebuilding. Nearly 50 per cent. of the line is ballasted. A little decomposed granite is used, but the ballast is chiefly gravel, usually well selected and clean.

Where ballast has been put in, the road-bed is well trimmed up and maintained, presenting a neat and workmanlike appearance.

Cross-ties are of red pine on eastern end of road, and of redwood on the west end. Renewals are all made with ties sawed to equal lengths and "spotted," and laid in track with ends in line. The renewals of ties are well kept up. The "life" of ties is much longer on the "alkali" plains than under ordinary circumstances.

Renewals of rails are now all made with steel. The standard is 60 pounds per yard, with double-fish (one plain and one angle) splice, laid with opposite joints, suspended. There has been some steel laid as light as 50 pounds per yard. Some of the iron put down when the road was built, laid with joint chairs, is still in use. It has worn remarkably well, but is now nearly worn-out. The surface of the track is generally good, often excellent. Where old chair iron is in use the surface is not so good as elsewhere. The track is in excellent line, great care being taken to have all curves and tangents true, such reference points as are

necessary to this end being established with instruments, and trackmen required to line the track to them.

The majority of the switches are "stab," with upright cast-iron switch stands rigged with targets. Quite a number of Wharton switches have been put in use during the present year, and are giving entire satisfaction. Switches are not lighted. Trains are required to "slow up" on approaching them. Cast frogs are being replaced with steel rail frogs as fast as worn out. The policing of the road is excellent; all old material and rubbish about station and shop buildings is promptly removed, and material for use, piled up. The road-bed, as a rule, is well trimmed up, and most of the ditches kept clean, and a considerable portion of the "right of way" cleared up.

The road is not supplied with mile-posts, or danger-boards at road-crossings. On a considerable part of the line the latter are not needed. The line is fenced by the company where circumstances require it. The bridges are Howe truss, straining beam truss, pile and trestle, and a few wooden girders on masonry. The truss bridges are covered, most of the large ones with galvanized iron. These bridges, with few exceptions, were put up when the road was built. The time is very soon coming when renewals must be made. This should be done with wrought-iron trusses on permanent substructures. In one or two places, stone arches might be better. The temporary trestle approaches to the large bridges on the mountain should be done away with, suitable masonry built, and embankments filled in. The pile and trestle bridges are generally in good condition, as regards quality of material. In some cases repairs and renewals should immediately be made, and section of girders increased. The safety of the bridges would be increased by placing the ties closer together, and putting guard timbers on, notched down, and properly fastened, so as not to interfere with snow plows. The station buildings are nearly all temporary frame structures, most of them erected when the road was built. They are kept in tolerably good repair. At Ogden, the buildings are partly owned by this company, and partly by the Union Pacific Company. As suggested in report on the Union Pacific, this whole yard should be remodeled. At Sacramento, the company is putting up a new passenger station. This is a frame building with a roof spanning the platform and tracks, and will supply a much needed convenience at this point. The company furnishes dwelling-houses to section foremen. The standard style of section-house, as now built, is a neat, though inexpensive dwelling. The water-supply is meager and of bad quality on a large part of the company's line. This is one of the greatest difficulties with which they have to contend. Water-tanks are of various sizes, usually enclosed in temporary buildings. Water "cranes" could be established in several places to advantage, obviating the necessity of extra stops for the purpose of taking water. Pumping machinery is good. The road is well supplied with wood and coal stations. Coal chutes with pockets, or small cars with over-head drops, would be a great improvement at the principal coaling stations.

There are frame engine-houses at Ogden, Promontory, Terrace, Toano, Wells, Carlin, Winnemucca, Hot Springs, Wadsworth, Truckee, Ellis, and Niles, with stalls varying from 1 to 20 in number. The one at Terrace is partly roofed with corrugated iron; those at Winnemucca, Carlin, and Wells, are entirely roofed with corrugated iron, and those at Winnemucca and Carlin have stone foundations and masonry pits. The engine-house at Rocklin is partially built of stone, has 18 stalls, and is roofed with corrugated iron. Engine-house at Sacramento has 20 stalls, is built of brick, and has corrugated iron roof. The old wooden turn-

tables are being replaced with cast-iron ones, with masonry pits. There are frame shops for ordinary running repairs at Terrace, Carlin, and Wadsworth. The principal shops of the company are at Sacramento. They are well laid out, amply supplied with machinery, apparently well administered, and sufficient for all ordinary demands upon them.

The machine, smith, paint and carshops are of brick, with roofs covered with corrugated iron. The foundry, wheel-foundry and boiler shops are frame, the first roofed and sided with corrugated iron, and the two last sided with boards, and roofed with corrugated iron. The shops are all well supplied with fire service. For about 40 miles across the Sierra Nevada Range the line is covered with snow galleries; they are strongly built of timber, and, where necessary, anchored to substantial masonry. They are beginning to need considerable repairs, and will soon require renewal. In view of the constant danger from fire, it is probable that an iron structure would be more efficient and economical in the long run. For protection against fire, three water-trains are constantly on duty in the galleries, and a fire-alarm telegraph is in operation and district signal-boxes established, through which watchmen are required to report on each round, and can also report casualties, such as fire, shed down, slide, &c., and can call for wreck-car or other assistance, as may be necessary. A telephone line is also in operation, with stations at points between telegraph offices. The rolling-stock is in good condition. The passenger stock is equipped with Westinghouse air-brake and Miller platform. A commendable feature of the emigrant service is the introduction of berth racks in emigrant cars, allowing travelers in them better opportunity for rest, and enabling the company to carry more passengers per car than would otherwise be the case. The road is well supplied with snow-plows and ice-flangers in good condition.

Wood is used for fuel for locomotives on the mountain; coal elsewhere. The company owns and operates coal mines at Evanston, Utah, on the Union Pacific Railroad, 76 miles from Ogden.

NILES TO SAN FRANCISCO.

The line from Niles to Oakland is in good condition. It is partly laid with steel rails, and is ballasted with gravel. The station buildings are small, but in good repair.

The ferry between Oakland Wharf and San Francisco is operated with boats that are first class in appointments and neatness. The ferry slips are well built. The passenger rooms, both at Oakland Wharf and San Francisco, are very inferior.

The company is now filling in a portion of the Oakland pier, making the work more permanent. When this is completed the arrangement of slips will be changed. At Oakland there is a frame engine-house with 21 stalls, and temporary shops for ordinary running repairs. The yard here is to be remodeled in connection with the wharf. The company is possessed of an extensive property at this place, sufficient for extensions and improvements for some time to come. They also have in San Francisco an extensive office-building, and also own, conjointly with the Southern Pacific Company, what is called the Mission Bay property. This property consists of the whole or part of 38 city squares on the Bay of San Francisco, donated by the State of California to these two railroad companies for terminal purposes. It contains about 60 acres, exclusive of streets (which have not as yet been vacated). The greater portion of the tract has yet to be reclaimed from the bay. A few acres have been filled in, wharves built, some tracks laid, and two large temporary warehouses erected.

CALIFORNIA AND OREGON RAILROAD, NOW OREGON DIVISION.

This road was consolidated with the Central Pacific Railroad June 30, 1865.

It is subsidized with land grant, and consists of a single-track line extending from Roseville Junction, 18.2 miles east of Sacramento, to Redding, California, 151.17 miles, being for the whole distance in the Sacramento Valley. The maximum grade is 52.8 feet per mile, and maximum curve 3°. It has a small amount of steel rail, but is chiefly laid with iron, much of it with joint chairs. Perhaps twenty per cent. of it is ballasted with gravel. Ties are of soft wood; switches are "stub," of same pattern as is used on main line. There are over four hundred openings on the line, spanned with Howe and straining beam trusses, and pile and trestle bridges. The bridges are all on wooden substructures, and the trusses nearly all covered. Some repairs are needed. Station-buildings and section-houses are similar to those on main line.

There is a temporary engine-house at Red Bluff with three stalls and wooden turntable. The road is fenced. The track is in fair condition and the road generally, up to ordinary requirements for a branch line.

Oakland to Tracy, via Northern Railway, and San Pablo and Tulare Railroad.

The line was opened to Martinez July 9, 1878, and to Tracy September 8, 1878.

It follows the bay and river to Antioch, and thence crosses the low lands to Tracy, on the subsidized line, thus avoiding the Livermore hill, but increasing the distance over the Niles route about 11 miles. With the exception of some heavy work near Pinole and Tormey, the graduation is light. The cuts and embankments are nearly all of good width. There are two (2) tunnels, both of them excavated for double track, and both short. No. 1 is through solid rock, and No. 2 is timbered. A small portion of the line is through what is termed "tule" land. This land has a surface stratum of soil, of greater or less thickness, with a substratum of soft mud. Owing to injudicious construction, much trouble has been experienced where the line crosses any of this formation. The road is laid with 50-lb. steel with double fish-splice, put down with joints opposite and supported, and is ballasted with gravel. Ties are redwood. Line and surface of track, good for a new road. Switches are "stub," same as on subsidized line. Line is fenced, but has neither mile-posts, nor danger-boards at road-crossings.

The bridges are all pile, except one small Howe truss draw at Martinez. Station buildings are better in design, and of a more permanent character than those on the line between Ogden and San José. There is a small engine-house, with one stall, at Antioch. The line is well supplied with water-tanks, and the pumping machinery is good.

At Carquinez is located the new slip which is to form part of the ferry service on the new route via Benicia. It is, to all appearances, an excellent structure of the kind.

NEW LINE FROM SACRAMENTO TO CARQUINEZ, VIA CALIFORNIA PACIFIC RAILROAD AND NORTHERN RAILWAY TO BENICIA, AND FERRY TO CARQUINEZ.

The California Pacific, from Sacramento to Fairfield Junction, lies for the whole distance in the low-lands of the Sacramento River. It is subject to heavy floods from the river, and a large amount of work has been

done, raising the grade, rip-rapping embankments, and providing necessary water-ways. During the past year it has been ballasted with gravel, and the widening of the banks partially accomplished. A small portion is laid with 50-lb. steel, but the greater part is old iron on joint chairs. The road is evidently improving, but will require a considerable expenditure before it will be fitted for a heavy traffic. The bridge over the Sacramento is new. It is a Howe truss, with a pivot draw span, and is used both for trains and wagons. The majority of the other bridges are pile structures. The buildings are in fair condition. The line from Fairfield Junction to Benicia, via the Northern Railway, is new and is not yet opened for use. It is laid with 50-lb. steel rail, redwood ties, and gravel ballast. The "tule" land has also given trouble here. The slip at Benicia is similar to the one on the opposite side of the strait at Carquinez. The boat which is to serve the ferry is now under construction at Oakland, and is designed to transport forty-eight freight-cars at one trip.

KANSAS PACIFIC RAILWAY.

This company operates 771.8 miles of single-track line as follows, viz:

	Miles.
Main Line, State Line Kansas City, to Denver.....	638.6
Leavenworth Branch.....	34.0
Junction City and Fort Kearney Railroad.....	55.1
Salina and Southwestern Railroad.....	21.1
Solomon Railroad.....	23.0
Total operated.....	771.8

Of this mileage, 393.2425 miles of the main line, west from Kansas City, are subsidized with bonds, right of way, lands, and materials.

The line was originally located with maximum grades of 75.8 feet per mile going west, and 87.2 feet per mile going east, and maximum curve of 7° 40'. There were many serious errors of location, a number of which have been rectified by changes of line since the road has been in operation. The company proposes continuing these changes as their circumstances permit. When completed, they will materially lessen the cost of operation. In general, the road follows the surface of the ground very closely, there being comparatively few points where heavy work has been done. The cuts and embankments in numerous places need widening. The larger portion of the road-bed, however, is of fair width and much of it good.

There are no tunnels on the line. A large part of the masonry under the bridges has been rebuilt and is good. Some of the masonry in small openings needs attention.

But a very small portion of the road is ballasted. Short pieces here and there have been ballasted with broken stone, gravel, or cinder. On the Kaw Valley division there is quite a large quantity of stone for ballast already delivered alongside the track.

The cross-ties on the eastern end of the road are of oak; on the western end, pine. Large renewals have been made during the year. A sufficient number to the mile has been used. The ties are of irregular lengths, and are not laid with either end lined. Renewals of rails are being made, partly with rerolled iron, and partly with 60-lb. steel. Some 52-lb. steel has been used. New rails are laid with double fish-splice, with opposite joints, supported. There is a large amount of the iron put down when the road was built—laid on joint chairs—still in use. Probably 50 per cent. of the track is on fair line and surface, and much

of this can be classed as good. In addition to this, much of the old iron track is well lined up. At the end of the season, when renewals for the year are all completed, the showing will doubtless be much better. The switches are "stub," with upright lever, or revolving stands, rigged with targets. The revolving pattern is now standard. The switches are not lighted. Standard frogs are made of steel rail. The miles are marked on the telegraph poles. The snow-fences were undergoing general annual repairs at the time of inspection. The telegraph line is in good condition. As fast as worn out the truss bridges are being replaced with wrought-iron structures. The bridge over the Kaw River at Kansas City is owned jointly with the Missouri Pacific Railroad Company. It is a combination Pratt truss, through, single-track bridge, having three spans of 180 feet each, with first-class masonry built for double track. The company has now in progress a general overhauling and renewal of pile and trestle bridges. A large part of this work is already accomplished, and at the end of the present season these structures will be in commendable condition. Many old openings have been filled up and some new ones made. The total number of openings has, however, been considerably reduced. The bridge floors are provided with guard timbers both inside and outside of the rails.

Station service at Kansas City is furnished by the Union Depot Company. The stations at Grantville, Bavaria, Wilson's, Russell, Victoria, and Ellis are stone. The two latter are two-story buildings. The new stone stations, as now put up by this company, are very neat and substantial buildings. At Wakeeny, Abilene, and Topeka the stations are chiefly owned by private parties. With few exceptions the frame station buildings are in good repair, requiring no more than ordinary repairs, and are sufficient for present purposes. At Denver a union depot is much needed, and I believe that preliminary steps to this end have been recently taken. Section-houses are furnished to track foremen at various places. Nearly all of the water-tanks are in good condition. The pattern now used, in all renewals, is the "frost proof." Those recently put up are set on wrought-iron columns, made of old rails, with masonry foundations under. The new tanks for ordinary service contain 45,000 gallons each. The pumping machinery, both wind and steam, is in good condition. On the western portion of the road, the water-supply is somewhat limited and of inferior quality. At Armstrong, near Kansas City, there is an engine-house with ten stalls of brick and eight stalls of frame building. The shops at this point are the principal shops on the line. They are well arranged, are apparently sufficient for present demands, and are in good condition. They are frame buildings. There are small frame engine-houses at Lawrence and Topeka, each with two stalls, and one at Hugo with six stalls. There is a stone engine-house at Wamego with eight stalls, one at Brookville with ten, and one at Ellis with eight, (and a frame addition of four,) and one at Wallace with ten stalls. There is a small frame carpenter and smith shop at Wamego and a frame machine-shop at Ellis. Wrought-iron turntables are being put in in place of wooden ones. At Denver the engine-house and shops are partly owned by this company, and partly by the Denver Pacific Railroad and Telegraph Company. The engine-house has four stalls of brick, in bad condition, and six stalls of wood, very temporary. There is a stone machine-shop, and frame tin, wood, smith, and paint shops. These shops should be rebuilt on a better plan and the yard rearranged. The shops are all well supplied with fire service. The policing is tolerably well done. The station and shop buildings are, as a rule, neatly kept, a large portion of the ditches kept clear, and the road-bed, for a portion of the line, trimmed up.

The rolling-stock is in good condition. Nearly all of the locomotives have been recently overhauled and repaired. The passenger stock is equipped with Miller platforms and Westinghouse automatic brakes.

Fuel used, is coal from Kansas and Colorado mines. No examination of the branch lines was made.

DENVER PACIFIC RAILWAY.

This road was put into the hands of receivers April 2, 1878, and at the time of inspection was operated by one of them. Recently, however, it has been removed from his jurisdiction, and is now operated in connection with the Kansas Pacific. It has a land grant direct from the United States. The road consists of a single-track line extending from Denver, Col., to Cheyenne, Wyo., 105.89 miles. The maximum grade is 90 feet per mile. Between Denver and the 90th mile the graduation is very light. Between the 90th mile and Cheyenne it is somewhat heavy. The embankments need widening. For a considerable portion of its length the natural material of which the road-bed is composed is somewhat gravelly, making a good foundation for a road with a light traffic. The cross-ties are of soft wood and need extensive renewals. They are of irregular lengths and not laid in line. The rails are 56-pound iron, laid with plain double fish-splice and opposite joints, supported. A portion of the iron, laid when the road was built, has been renewed with rerolled iron. Where the iron has been renewed the track is in fair line and surface. Elsewhere, inferior. The switches are "stub," with upright stands and targets. Frogs are cast or rail.

The bridges are all pile or trestle. They should have more cross-ties on them, and be provided with guard timbers.

In Denver, the company has a frame station, a brick warehouse, and a brick office and station near the head of the yard. At Cheyenne a good brick warehouse, and a frame passenger station. The station buildings between Cheyenne and Denver are frame, and need some repairs. The platforms generally need renewing. The water stations are not in first-rate condition, the pumping machinery, especially, needing renewal. The shops at Denver are owned and used jointly with the Kansas Pacific, and have been noticed in the report on that road.

Four out of the six locomotives owned by the company have recently received general repairs and are now in good condition. The freight and passenger equipment needs considerable repairs. Passenger stock is supplied with Westinghouse air-brake.

This company operates the Denver and Boulder Valley Railroad under lease.

CENTRAL BRANCH UNION PACIFIC RAILROAD.

This road is subsidized with bonds, lands, depot grounds, and materials, and is a single-track line, extending from Atchison to Waterville, Kans., 100 miles. The company also operate, through leases or otherwise, 158 miles of single line west of Waterville.

The line is laid with maximum grades of $63\frac{4}{5}$ feet per mile going west, and 66 feet per mile going east. The maximum curve is $3\frac{1}{2}^\circ$, and 70 per cent. of the line is tangent. On the first 20 miles some medium heavy work has been encountered, but on the rest of the road the work is light. A good many of the embankments and some of the cuts need widening, and the ditches should be opened.

The bridge masonry is good.

But a very small portion of the road is ballasted, the track being maintained with earth. The ties are in fair condition, and are of irregular lengths, not lined at either end. Renewals are made with oak. The surface of track is inferior; line fair. The first 20 miles were originally laid with 50-pound iron, and the remaining 80 miles with 56-pound iron. Much of this original iron is still in use, but a small portion of it having been renewed, and that with rerolled iron. The fastenings are double fish-splices and old joint-chairs. Track is laid with opposite joints, supported. The switches are "stub," with upright switch stands, and targets, and are not lighted. The telegraph line is in good repair. The Howe truss bridges need strengthening. Some of the girder bridges have had additional girders put in, and this should be done on the remainder.

The station buildings are in good condition. The one at Atchison is a two-story frame building, and contains the general offices of the company, in addition to the passenger station and ware-house. The station building at Muscotah is of stone, the rest are frame.

The water-stations are all "frost-proof" tanks, and are in fair condition. The pumping machinery, both wind and steam, is good. There is a stone engine-house at Atchison with six old and seven new stalls, and wooden turntable, and also a stone machine-shop and a frame paint-shop, all good. Of the 26 locomotives, all are new except six, and some of these have recently had general repairs. The passenger and freight equipment is good, much of the latter being new. The passenger stock is supplied with Westinghouse automatic brake. Considering the difficulties with which this company has had to contend, and that for several years previous to the present one, the earnings of the road have been insufficient to pay fixed charges, the road is in as good condition as could be expected. The leased lines are all prairie roads, laid across an undulating country, with maximum grades of $67\frac{1}{2}$ feet per mile and a maximum curve of 4° . The graduation is generally light, and formation level, of fair width. The bridges are pile, trestle, and combination trusses, and a few wooden girders on masonry. The large trusses are on iron-tube foundations. They are partially ballasted with gravel. The rails are 56-pound iron, with double plain fish-splices, laid with opposite joints, supported, on oak ties. The track is in good surface and in fair line.

The stations are small, but sufficient for the demands upon them. The water-stations are in good condition. There is a three-stall frame engine-house at Washington, and a new one at Greenleaf of six stalls. The turntables are wood. The leased lines all run through a fine farming country, which is rapidly filling up with settlers. They have all been opened for travel since 1876, and, consequently, have been built with labor and material at low rates.

SIoux CITY AND PACIFIC RAILROAD.

	Miles.
This company owns a single-track main line from Sioux City, Iowa, to Fremont, Nebr.....	101.2
And a branch from California Junction to Missouri Valley.....	5.84
Total	107.04
And operates, under lease, the Fremont, Elkhorn and Missouri Valley Railroad.	51.09
Making a total operated of.....	158.13

The road has been subsidized with bonds, lands, depot grounds, and materials, from Sioux City to Fremont, 101.77 miles, which includes the

crossing of the Missouri River, which is operated by means of a ferry. The act of Congress provides that the subsidized roads shall be completed in sections of 20 consecutive miles, before bonds shall be issued. There is room for doubt whether the section including this ferry-crossing can properly be considered as "consecutive," although it was accepted as such by the examining commissioners. Without doubt, a bridge across the Missouri River was contemplated as a necessary part of the branch of the Pacific Railroad system to Sioux City. At the time the road was under construction estimates were submitted by the railroad company of the probable cost of the road, *including the cost of the bridge*, and a ferry suggested as a *temporary expedient*. Owing to the uncertain character of the river, it is often necessary to change the landings of the ferry on either shore, and at any time its operation may be entirely suspended by some change in the stream. It is very doubtful, however, whether the business of the company, either present or prospective, will justify the construction of a bridge, and also whether the probability of recovery to the government, of any portion of the subsidy would be increased thereby.

The main line is laid with maximum grades, both east and west, of 53 feet per mile. The maximum curve is $5^{\circ} 25'$, and 91 per cent. of the line is tangent. In Iowa, with the exception of about one-third of a mile near Sargent's Bluff, the graduation is light, the line running for its whole length in the Missouri bottoms, and for nearly the whole distance it is a low embankment. In Nebraska, the road crosses the headwaters of some small streams, and there are several points at which heavy work has been encountered. In a few places the road-bed should be widened, but generally it is of fair width. There is no bridge masonry on the line. The road is not ballasted. The cross-ties are of oak and cedar; all renewals, except on curves, being made with the latter. A good many new ties are needed. Except for about eight miles, where iron has been renewed, the original iron is still in the track. This is beginning to wear out, and in a very few years will all require renewal. Iron is 56 pounds per yard, with plain double fish-splice.

The line and surface of track in Iowa is fair; in Nebraska, inferior. The switches are "stub," with upright switch-stands and targets. Frogs are of various patterns, chiefly cast. The road has 13.1 miles of side track. Nearly all fences are kept up by the land-owners. The line has mile-posts, and danger-boards at crossings.

The bridges consist of one Howe truss, 160 feet span, two combination Pratt trusses, one of 160 feet, and one of 180 feet span, and 125 pile and trestle bridges. The Howe bridge needs immediate renewal. The combination bridges are new and in good condition. A few of the pile and trestle bridges need rebuilding, the remainder are in good repair. The bridge floors are laid without guards.

The station buildings need some painting and minor repairs to put them in good shape. The company has a brick engine-house with four stalls at Blair, one at Sioux City, with six stalls, and an engine-house, a machine-shop, and a car-shop at Missouri Valley.

Plain frame dwellings are provided for track foremen. Time did not permit an examination of the rolling-stock. It appears to be in a fair condition. The passenger equipment east of the river has Westing-house automatic brake and Miller platforms.

SOUTHERN PACIFIC RAILROAD (NORTHERN DIVISION).

This is that portion of the Southern Pacific Railroad Company's line not leased to the Central Pacific. It consists of a single-track main line

from San Francisco to Carnadero, with branches to Trés Pinos and Soledad. That part of the line between San José and Trés Pinos has a land-grant. A hasty examination of the portion of this road between Pajaro and San Francisco was made. The line is laid with 50-pound steel between San Francisco and San José and 56-pound iron elsewhere. The track is in fair line and surface. Between San Francisco and San José the line is ballasted with gravel, and beyond this point has gravel back-filling. Ties are redwood. Switches are "stub," with upright switch-stands and targets, and are not lighted. The bridges are Howe and straining-beam trusses, and pile and trestle, and appear to be in good repair. Station and other buildings are in good condition. The road is well fenced, and provided with mile-posts and road-crossing boards. The ditches need clearing, and the trimming up of road-bed and details of maintenance of way might be improved.

BURLINGTON AND MISSOURI RIVER RAILROAD IN NEBRASKA.

This company owns—

Main line, Plattsmouth to Kearney Junction..... 190.5

and leases—

Omaha and Southwestern Railroad..... 46.6

Nebraska Railway and branches..... 136.5

Republican Valley Railroad..... 69.4

Total leased..... 252.5

Total owned and operated..... 443.0

A hasty examination of that portion of the road between Omaha and Hastings was made.

The excavations and embankments are generally of good width; a few points only need widening. The ditches in cuts need opening. The maximum grade is 30 feet per mile, and maximum curve 3°. The masonry is of all grades. The road is not ballasted. The cross-ties are of oak, and are of irregular lengths. There are about 30 miles of track laid with steel rails, with double fish-splices, joints supported, and opposite. The rest of the road is laid with iron rails (about 70 miles of it 49 pounds per yard) and needs pretty large renewals. The surface of track is medium. Many of the curves and some tangents need to be trued up. The switches are nearly all the old-style "point," with upright switch-stands with targets, and rail-frogs. The bridges are Howe truss, trestle and pile, and have floors well laid, and provided with guard-timbers. The line is partly fenced. There are no mile-posts.

The passenger station at Omaha is a very handsome structure of brick, with neat accommodations for passengers, and covered platforms. The other stations appear to be in good condition, and sufficient for present demands. Want of time prevented an examination of shops, engine-houses, &c., or any detailed examination of rolling-stock. The latter appears to be in good repair. The passenger equipment is furnished with Westinghouse air-brake and Miller platforms.

CHICAGO, BURLINGTON AND QUINCY (IOWA DIVISION).

This line extends from the Missouri River to Burlington, 279 miles, and was formerly the Burlington and Missouri River Railroad. It received a grant of land from the State of Iowa, given to the State by the general government for this purpose. A hasty examination only was

made. The line, for the whole distance, is across the drainage, and was originally laid with maximum grades of 69 feet to the mile, both east and west. The maximum curve is $4\frac{1}{2}^{\circ}$. The original location was faulty, the maximum grade having been used in places where a lighter one would have been no more expensive. The company has made, and is still making, changes of line, reducing the grade to a maximum of 35 feet per mile, and operating the old and new lines as double track, using the old one for the *down* line.

There is a good deal of heavy work on the line. The cuts are generally of good width, but, in many places, need to have the ditches cleared and the slopes trimmed up. Some of the embankments need widening. The company is replacing trestle bridges with box and arched culverts, and wooden trusses with wrought-iron, as fast as they need renewal. About 50 % of the line is ballasted with broken stone, gravel, or cinder. The cross-ties are of oak, of irregular lengths, and are generally good. There are about 230 miles of track laid with steel rails. The standard section is 66 pounds per yard, with double angle fish-plates, laid with opposite joints, suspended. The track is in fair surface, and on eastern end good. The curves in some places need truing up. The switches are old style "points," with upright revolving switch-stands, and are lighted. Semaphore signals are used at dangerous points, are operated by watchmen, and are lighted at night. The road is fenced by the company for nearly its whole length, and is provided with mile-posts and road-crossing boards. No special examination of the buildings was made. The station-buildings appear to be in fair condition. The company has a brick engine-house with 40 stalls, and brick shops at Creston; and a brick engine-house with 30 stalls at Ottumwa.

The rolling-stock is in good order. Passenger equipment has Westinghouse automatic brake and Miller platforms.

SAINT JOSEPH AND WESTERN RAILROAD.

Only a hasty examination of this road was made. It extends from the Missouri River at Saint Joseph, to Hastings in Nebraska, 226 miles. Its land-grant was obtained through the medium of the State of Kansas. A good many of the cuts and embankments need widening, and a large amount of ditching should be done.

There are short stretches of stone ballast in numerous cuts. It is generally well broken, but is badly drained.

Cross-ties are of oak, of very irregular lengths, and many of them second class. Large renewals are needed. Extensive renewals of iron are also needed. The rails are laid "hap-hazard," partly with fish-plates, and partly with joint chairs. Line and surface of track inferior. The curves generally need rectifying. The switches are "stub," with upright switch-stands and targets, and are not lighted. Rail-frogs are used. Road is furnished with mile-posts and road-crossing boards.

The bridges are Howe truss, trestle, and pile. A few bridges are on masonry. The station buildings are frame, and are in pretty good repair, but many of them need painting.

The line is tolerably well supplied with water-stations. The pumping is partly done by horse and partly by wind power. The wind machinery is good. No examination of engine-houses, machine-shops, or equipment was made, for want of time.

THE HANNIBAL AND SAINT JOSEPH RAILROAD.

This road received a land-grant through the medium of the State of Missouri. A hasty examination was made of the main line—Hannibal to

Saint Joseph, 206 miles. The road runs in a very direct line across the State of Missouri, over a rolling country, and most of the way through a good farming region. The road is laid very close to the surface, following the rolls, and making a series of summits and depressions, with steep grades. The maximum grade is 80 feet per mile, and maximum curve 4°. The embankments are generally narrow, the cuts of fair width but need ditching. The bridge masonry is in fair condition.

A portion of the road is ballasted with gravel and a little with broken stone. The ties are of oak, of irregular lengths, and not laid in line. At the close of 1878, the company had 128.9 miles of steel track in use, and has laid some more during the present year. The steel is 52 and 56 pounds per yard, laid with angle bar fish-splices. That portion of the road laid with steel is in good line and surface. The line is well fenced.

The bridges are Howe truss, pile and trestle. Some of the bridges need strengthening, and some should be renewed.

The station buildings and water-stations appear to be in fair condition. The main shops of the company are at Hannibal. They are not large, but are capable of turning out a good deal of work, and are, apparently, of sufficient capacity for all present demands.

Of the 78 locomotives, six are new, and about 70 per cent. of the old ones have recently undergone general repairs. Extensive repairs have also been made on the passenger and freight equipment, during the last eighteen months, and it is now in fair condition.

These lines, embracing as they do roads of all classes, operated under such various conditions of climate and material prosperity, should be judged each according to its circumstances. The returning tide of prosperity will doubtless bring an increased business to all, but more especially to the great lines. It is important, therefore, that these should be equipped with all the appliances for safety and comfort known to modern practice.

The introduction of these, a more thorough policing, and a closer attention to the details of maintenance and operating, each as it may be required, cannot be too strongly urged.

I desire to acknowledge the uniform courtesy of the officers of the different roads while making these examinations.

Respectfully,

A. B. NICHOLS,
Railroad Engineer.

Hon. THEOS. FRENCH,
*Auditor R. R. Accounts,
Department of the Interior.*

1.—Table showing elevation above level of the sea of various points.

Stations.	Above level of sea, in feet.	Stations.	Above level of sea, in feet.
New York, N. Y.	0	Denver Colo.	5,197
Cincinnati, Ohio (about)	540	Salt Lake City Utah	4,261
Chicago, Ill.	580	Winnemucca, Nev.	4,333
Leavenworth, Kans.	780	Sacramento, Cal.	30
Omaha, Nebr.	1,003	Red Bluff Cal.	308
North Platte, Nebr.	2,625	San Francisco, Cal.	0
Cheyenne, Wyo.	6,075		

5.—Table of monthly and annual mean temperatures.

Station.	1877.						1878.						Year.
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	
New York, N. Y....	Fah. 74.1	Fah. 74.5	Fah. 68.6	Fah. 58.6	Fah. 46.0	Fah. 39.9	Fah. 32.0	Fah. 34.4	Fah. 43.7	Fah. 52.4	Fah. 58.1	Fah. 65.5	Fah. 62.6
Cincinnati, Ohio....	77.4	75.6	68.9	60.1	45.9	47.8	36.5	41.2	51.7	61.7	63.8	70.1	68.8
Chicago, Ill.....	73.3	71.4	66.6	55.0	40.0	43.1	31.3	35.9	44.4	52.3	55.8	65.4	62.9
Leavenworth, Kans.	76.3	75.1	67.9	54.5	39.5	44.2	33.1	40.2	50.9	58.8	62.3	70.6	68.2
Omaha, Nebr.....	76.0	73.2	66.6	51.1	36.3	39.2	28.9	38.9	48.1	55.0	58.5	68.4	63.2
North Platte, Nebr.	75.5	72.8	64.6	44.6	32.4	37.7	24.9	34.6	44.3	51.0	54.9	66.0	61.1
Cheyenne, Wyo....	70.2	67.9	58.2	40.0	30.1	28.9	25.2	30.9	38.7	43.5	47.9	58.6	44.8
Denver, Colo.....	73.2	70.9	61.9	44.7	34.3	30.0	28.1	36.2	44.3	49.9	54.0	64.2	49.3
Salt Lake City, Utah	78.2	76.3	65.0	51.0	40.1	31.7	30.0	37.3	46.6	49.8	56.2	66.4	52.6
Winnemucca, Nev..	74.9	72.0	61.8	47.4	38.2	30.8	31.5	35.3	44.4	48.4	55.4	66.0	50.6
Sacramento, Cal....	75.7	73.0	72.8	62.7	53.9	47.8	42.0	51.0	56.5	58.8	66.4	73.0	61.8
Red Bluff, Cal.....	74.1	70.5	77.1	63.8	53.6	46.9	47.2	49.9	55.3	60.8	66.4	82.2	63.9
San Francisco, Cal.	59.9	58.6	61.2	58.2	56.5	52.6	53.0	53.2	56.6	55.2	57.2	58.2	56.0

REPORT OF THE COMMISSIONER OF PENSIONS.

DEPARTMENT OF THE INTERIOR, PENSION OFFICE,
Washington, D. C., November 1, 1879.

SIR: I have the honor to submit the following report of the transactions of this bureau for the year ending June 30, 1879:

On the 30th of June last there were 242,755 pensioners. The pension list is now larger than at any previous time. The highest point heretofore reached was in 1873, but the number now reported exceeds the list of that year by 4,344.

The present list is composed of 125,150 Army invalids; 81,174 Army widows, children, and dependent relatives; 1,844 Navy invalids; 1,772 Navy widows, children, and dependent relatives; 11,621 surviving soldiers of the war of 1812, and 21,194 widows of deceased soldiers of that war.

During the year 31,346 new names were added to the list, and 908 names which had previously been dropped from the rolls, mainly from a failure for three years to claim their pensions, were restored, and 13,497 were for various reasons dropped.

The aggregate amount of one year's pension to all the pensioners on the rolls is \$25,493,742.15, but the actual annual payment exceeds that sum by several million dollars. This arises from the fact that nearly all the newly admitted Army and Navy cases have several years' accrued pension due at the time of admission, which is paid at the first payment. During the year the first payments to new pensioners amounted to \$5,763,758.60, of which \$4,375,146.89 were paid to Army and Navy invalids, widows, minors, and dependent relatives, and \$1,388,611.71 to the survivors and widows of the war of 1812.

The first payments to pensioners of the war of 1812 will rapidly fall off, while a material increase may be expected in the Army and Navy cases for several years, owing to the removal of the limitation upon the commencement of pensions by the acts of January 25 and March 3, 1879.

The above-named acts were passed after the estimates for the pensions for the fiscal year ending June 30, 1880, were submitted, and were not, therefore, taken into account when the appropriation was made; and there will be a deficiency in the pension appropriation for the cur-

rent year, as nearly as can now be estimated, as follows: \$5,000,000 Army pensions and \$30,000 Navy pensions, which should be provided for, in order that the pensions for the June quarter may be promptly paid.

The number of unsettled claims on the 30th of June last, as shown by the records, was 136,645, an increase of 16,258 within the year. These figures, however, include very few of the claims which were revived by the repeal of section 4717 Revised Statutes, and the others which had been rejected but called up after the repeal of that statute for further consideration. It is impossible, without great labor, to state the precise number of claims belonging to these classes, but it is estimated that there are not less than 40,000, and these, together with the new claims filed since June 30 in excess of the number settled since that date, will swell the number of pending claims at the date of this report to the enormous figure of 200,000, exclusive of the claims for arrears.

If new, original claims continue to be presented as rapidly during the remaining months of the fiscal year as they have been for the past nine months (and there appears no reason for expecting a falling off in the receipts), there will be pending in the office at the close of the year more than 250,000 unsettled cases.

Table 10 shows the receipt and disposal of original claims of all classes except for bounty-land warrants year by year from 1862 to 1879, inclusive.

Tables 9 and 9½ show the receipt and disposal of all classes, including bounty land, increase and arrears claims, month by month for twenty-eight months, from July, 1877, to October, 1879, inclusive.

It will be observed that the number of pending, unsettled claims has increased almost constantly from year to year during the whole period of more than eighteen years covered by these tables, and that from 1874 there has been a great and constant increase in the number of invalid claims which have come forward.

Since the act of January 25, 1879, commonly known as the arrears act, the new claims of invalids, widows, minor children, and dependent relatives have come in at an unprecedented rate, the invalids at a rate more than double that ever before known in the history of the office, except in the year 1866, and within a few hundred of double the rate of that year, which it will be noted was the year following the disbandment of the armies, when all the sick and disabled soldiers became at once entitled to apply for pension, while the rate of the receipt of widows', children's, and dependent relatives' claims is greater than of any year since 1867, and more than twice the rate of any year since 1871.

Added to this inflow of new business is the pressure of all the older claims for an early settlement, which was great and constantly increasing before the passage of the arrears act, but since its passage overwhelms the office with repeated demands of claimants for the adjustment of their claims, and altogether the current work of the office is greatly increased and has been thrown so far in arrears that there are many and very serious complaints at the delays in answering the inquiries relative to pending claims.

And to increase the difficulties of the situation, the records of the receipt and disposition of the claims in the office, which had long been felt to be based upon a system unequal to the demands of so extensive a business, and had been the subject of much study, with a view of adopting another system as soon as a proper one could be decided upon, proved to be entirely insufficient under the great load of new claims and the multitude of inquiries in the old claims which has followed the pas-

sage of the arrears act, and it became necessary to enter at once upon the preparation of a new record of the Army claims which originated or might originate subsequently to March 4, 1861.

The records of these claims have been kept in two series of numbers, one for invalid claims and the other for widows (the latter class including children and dependent relatives), and in two corresponding three-letter alphabetical lists. To illustrate: All surnames the first three letters of which are the same in order are recorded together; the combination "SMI" in the invalid list includes 4,500 names; "WIL," 4,900; "BRO," 3,400; "HAR," 3,900; "CAR," 2,700, &c.

The labor of searching for the name of John Smith, Company A, Sixteenth Illinois Volunteers, is therefore very great, and besides, the searcher is liable to overlook the name, and this may result in the filing and prosecution of two claims by the same claimant, or in the office informing an inquirer that no such claim has been filed, or in some embarrassing confusion of claims, and these mistakes occur quite frequently with the most practiced and careful searcher, and as the names increase in number, the labor and difficulty attending the search of necessity increases.

The system for the new record will separate the names of applicants into their proper military organizations, and a search for the name of John Smith, Company A, Sixteenth Illinois Volunteers, will be confined to the members of his own company who have filed applications for pension, or on account of whose service a widow's claim has been filed.

It is apparent that under such a system there will be great economy of time and labor, and mistakes in searching will be next to impossible except through inexcusable carelessness on the part of the searcher, which has its easy remedy.

The labor of preparing the new record is very considerable; it was commenced in June last, and will probably be completed by February or March next, and until then the old system must be maintained.

While I regard it as impossible under the *ex-parte* system to settle the claims either promptly or properly, as I have had occasion in former reports to show, yet there is much preliminary work, and in all stages of the claims much correspondence which should not be put off and may be promptly attended to if a sufficient clerical force is provided, and with a view of partially relieving the office in this class of the business, I respectfully recommend an immediate additional appropriation of \$50,000 for the current year for the employment of additional clerical force. A considerably larger appropriation could economically be expended for this purpose but for the fact that the available room in the building now occupied by the office will not accommodate a greater addition to the force, and it would be inexpedient to divide the office by locating a portion of the force in another and separate building.

It is proper to add here that since a very large portion of the new claims cannot be proceeded with until a report of the military and hospital record of the soldier can be obtained, it will be necessary, judging from past experience, that the clerical forces of the Adjutant-General and Surgeon-General of the Army be considerably re-enforced in order to enable them to respond to the calls of this office with any degree of promptness.

There are now in this office more than 40,000 new claims, in which calls upon those officers for military and hospital records are to be made, and additional cases are coming in at the rate of five or six thousand per month, as will be seen by Table 9.

In connection with the condition of the business of the office, I again

refer to the subject of a change of system for settling pension claims, which I have recommended in each of my three preceding annual reports, and which you have commended to Congress, more especially by your letter of the 18th of February last, and which I now again recommend.

I will not attempt to recite all the facts nor repeat all the various arguments which have heretofore been urged in condemnation of the present system and in support of the plan which has been recommended as a substitute for it, but content myself with a concise statement of some of the principal objections to and evils of the present system, and the more important advantages which it is believed would follow the adoption of the plan proposed.

Besides being cumbersome and expensive, the present system is an open door to the Treasury for the perpetration of fraud. The affidavits in support of the claims have the same appearance to the officers of the bureau, whether false or true. The rules which are established in relation to the production of evidence in attempting to exclude the frauds often work a hardship upon the honest claimant. He finds himself, through the death or imperfect recollection of witnesses, or for some other cause, unable to comply with them, is often defeated, while the fraudulent claimant, who will manufacture the necessary testimony to meet them, succeeds in his claim.

The large sum of money which the claimant will receive upon the allowance of his claim, and the ease with which a fraudulent claim may be manufactured, constitute a powerful inducement to dishonest persons to present fraudulent claims, and these occupy the attention of the office in attempting to determine their merits, which ought to be given to the meritorious claims, and thus, by the encouragement of fraudulent claims, the system operates to delay the others to such a degree that, in many cases, it results in a practical denial of justice. And the pursuit of the necessary medical inquiries is little better than a farce. There are about 1,700 surgeons, for the most part neighborhood practitioners, who make the examinations of the claimants in their respective neighborhoods, and report their condition to the Commissioner of Pensions, for which service they are paid by the government a fee of \$1 (formerly \$2) for each examination.

Without reflecting upon the intelligence and integrity of these surgeons in general, it is a fact that the reports of these examinations too often bear evidence that they were of the most superficial character, and not unfrequently are they found to be untruthful in whole or in part—sometimes to the prejudice of the government, and then again to the prejudice of the claimant. And the consequence is, the medical referees and other professional gentlemen, whose business it is to review the medical side of the cases, are oftentimes as much in the dark in relation to the existence and character of the claimant's alleged disease, and the degree to which he is disabled by it, as though no examination had been reported, and not unfrequently arrive at wrong conclusions, and injustice follows, either to the claimant or to the government.

Connected with and a part of the *ex-parte* system is the investigation of supposed frauds, by clerks under the direction of the Commissioner. While comparatively few persons have been unjustly deprived of their pensions through this instrumentality, and vast sums of money have been saved by it, yet it is an offensive method of determining the merits of a pension claim, and is liable to be abused, and under the most scrupulous administration, great injustice may sometimes be done.

On the other hand, the change proposed will possess the following advantages over the present system :

1. The testimony and proceedings to establish the pension claims will be public and of a reliable character; this will facilitate prompt, more just, and more liberal decisions, and protect the Treasury from fraud, while the claimant's expenses will not be increased, but rather diminished.

2. The medical examinations being made by unprejudiced government officials, whose sworn duty it will be to find out and report the exact truth, both the claimants and the government will be relieved from the now too common danger of being made the victims of the ignorance, prejudice, or carelessness of a neighborhood examining surgeon.

3. The special investigation of cases by the special agents will be dispensed with as no longer necessary for the detection of fraud. The publicity of the proceedings in the neighborhood where the claimants reside will operate to restrain the presentation of unmeritorious and fraudulent claims, and furnish ample protection to the government against the successful prosecution of any such which may be presented.

But the great point, and the one to which every other consideration should yield, is, that the new system, through its public proceedings among the claimant's neighbors, will obtain the truth in the cases in such reliable form that prompt justice will be done to the deserving.

It would seem that the fact that *ex-parte* methods in the ascertainment of truth in doubtful or disputed questions have been condemned by the civilized world for centuries, and that open public proceedings, bringing parties and witnesses face to face that they may be interrogated, such as are proposed by the new plan, have been adopted by the unanimous judgment of enlightened people, based upon the common observation of mankind, ought to leave no question as to the propriety of discontinuing the *ex-parte* system in pension claims.

There is another aspect of the *ex-parte* system which should receive the most earnest consideration on the part of the government, and that is its fruitfulness of crime against the laws, in the nature of perjury, forgery, and false personation.

The following table shows the number of the two first named offenses committed in the cases of 500 pensioners whose names have been dropped from the rolls since July 1, 1876, because the pensions were obtained by fraud:

Class.	Number of claims.	False affidavits made by—				Total number of affidavits filed in the cases.	Number of forgeries.
		Officers.	Comrades.	Civilians.	Total.		
Invalid.....	229	201	170	763	1,233	1,581	6
Widows, &c.....	271	95	69	1,687	1,851	2,816	88
Total.....	500	380	248	2,450	3,084	4,397	92

It will be seen that 70 per cent. of these affidavits were false.

There had been paid to these 500 pensioners before their fraud was discovered \$547,225.

The efficiency which characterized the pay service during the year ending June 30, 1878, still continues in the agencies.

The agents quite generally complain that their compensation has been so far reduced that they are embarrassed in the conduct of their

offices. It is my opinion that their compensation is too small. Their expenses for clerical assistance, stationery, and postage are very great, and a very considerable expenditure on account of these three items is required of them which was not estimated at the time of the passage of the act fixing their compensation; *e. g.*, they are required to pay the audited accounts quarterly of the examining surgeons in their respective districts, also to the attorneys the fees allowed them in claims filed previous to June 20, 1878, and they also carry on a very large miscellaneous correspondence with the pensioners, answering their many inquiries and giving them instructions. All this requires the expenditure of money for postage, stationery, and clerical service. In addition to this three or four per cent. of the quarterly vouchers are sent to them improperly executed, and are returned to the pensioners at the cost of the agent, and sometimes letters come to the agent with short postage. These expenditures should be provided for, and I recommend that the law be so amended as to allow them eighteen instead of fifteen dollars for each one hundred vouchers prepared and paid, in order to compensate them for this outside work and expenditure.

Tables 9 and 9 $\frac{1}{2}$ show the progress of the settlement of the claims for arrears to November 1, and Table 8 shows the payments by the several pension agents.

It is estimated that the number of settlements yet to be made will not exceed 5,500, and it is believed that the \$25,000,000 appropriated for the payment of the arrears will be sufficient for the purpose.

The labor and responsibility imposed upon the pension agents in making the payments was nearly twice as great as it was estimated to be at the time the appropriation was made for the expenses of the agents.

The amount due each pensioner was in most cases considerable, and before paying the arrears it was necessary for the agent to examine the rolls and records of the agency for several years back, and these were very imperfect and in several series of volumes, and each case necessarily occupied considerable time in making this examination. I respectfully recommend that an additional fee of 20 cents in each case be allowed the agents, and that an appropriation of \$10,000 be made for the purpose.

Including the claims for bounty-land warrants, there were 75,525 claims filed, exclusive of the claims for arrears, and 62,275 claims settled, of which 40,176 were allowed and 22,099 rejected; an increase in the number of settlements over last year of 18,511. For a more particular account of the work for the year and comparative condition of the files in each class of cases, see Table 1.

SPECIAL INVESTIGATIONS.

The number of cases investigated, including 128 investigations of miscellaneous violations of law by attorneys and others, was 1,613; 609 cases of pensions which had been allowed were investigated, of which 393 of the pensioners' names were dropped from the rolls and the pensions of 55 others were reduced; 825 pending claims were investigated—468 of which were found to be not entitled; the saving to the government by these proceedings was \$501,269.82. Of the \$40,000 appropriated for the expenses of the investigations, \$35,842.25 only was expended. For particular detail, see Table 6.

The general efficiency of the clerical force of the office has continued to improve.

In my last annual report I had the honor to invite attention to the fact that there was no provision by which the chiefs of the divisions this office could be paid an adequate compensation, and to the discrimination in the statutes between those officers and the chief clerk, an appeal clerk, and similar officers of other bureaus and departments of the government. I renew my recommendation for an increase of salary for these officers.

The condition of the business of the bureau continues to require my assistance as deputy commissioner of pensions.

The results which followed the act of June 20, 1878, providing that the claim agents should collect of their clients their own fees in cases filed after that date instead of being collected for them by the pension agents, corresponded with my recommendation for its passage, as will be seen by the sudden falling off in the receipt of new invalid claims for the first six months of the fiscal year as against the receipt for the preceding six months and as against the average receipts for the whole preceding year. A comparison of these figures shows that the claim agents themselves, as soon as it became their interest to do so, eliminated and refused to file from 30 to 40 per cent. of the whole body of claims.

The arrears act came in in the month of January, and so changed the circumstances, that the effect of the act of June 20, 1878, upon the number of claims presented by claim agents cannot be further followed.

The following tables, some of which have already been referred to, are commended to your attention as embodying and classifying many interesting matters pertaining to the several subjects above alluded to.

Very respectfully,

J. A. BENTLEY,
Commissioner of Pensions.

Hon. CARL SCHURZ,
Secretary of the Interior.

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ACCOMPANY

TABLE 4.—Statement of the number of pensioners dropped from the roll during the year and the cause.

During the year ending June 30, 1879.	Invalids.	Widows and dependent children.	War of 1812.		Total.	Remarks.
			Survivors.	Widows of, &c.		
Loss to the roll:						were there those in
By death	1,126	385	600	126	2,401	
By remarriage		493		3	490	
By limitation (minors)		7,150			7,150	
Failure to claim for three years	586	1,022	708	854	2,871	
From other causes	397	156	0	15	576	
Total	2,171	9,210	1,408	710	13,497	

TABLE 6.—Statement showing the operations of the special-service division for the year ending June 30, 1879.

Whole number of claims investigated.	Miscellaneous—criminal acts, etc.	Total.	Pensioners dropped from the rolls.				Amount illegally drawn and refunded.		Pensioners reduced in rate.		Pending claims prima facie established, disallowed after investigation.				Aggregate saving from all sources.	Cost of the work.			Net amount saved.
			Number.	Pension due at the date their names were dropped from the roll.	One year's pension at their annual rate.	Total amount saved thereby.	Number.	Amount annually saved thereby.	Number.	Accrued pension due the claimants as first payments.	One year's pension at their annual rate if allowed.	Total amount saved by such rejection.							
1,485	128	1,613	303	\$65,642 96	\$52,954 92	\$118,597 88	\$11,019 33	55	\$2,907 44	408	\$308,561 02	\$248,124 16	\$856,085 18	\$501,200 82	\$21,237 60	\$14,604 25	\$35,841 25	\$405,428 57	

Attorneys: Suspended, 85; de
Criminal prosecutions: Cases
8; not processed, 6; no bills,
imprisonment.

d, 44; restored, 21.

other persons, 82; indictments, 47; convictions, 27 (attorneys, 13; other persons, 14); acquittals,
3; awaiting action, 185; pardoned before trial, 2; aggregate sentences, 34 years and 3 months

Number of claims in investigation files July 1, 1878
Number of claims in investigation files July 1, 1879

1,844
1,004

Decrease during the year

340

Number of claims in correspondence files July 1, 1878

300

Number of claims in correspondence files July 1, 1879

666

Increase during the year

297

Net decrease

43

Pending claims investigated, 825; admitted claims investigated (pension 609 bounty-land, 51), 680; total, 1,485.

TABLE B.—Arrears payments made at each agency, and number of invalids, widows, children, dependent fathers, and dependent mothers.

Agency.	Invalid.			Widows, &c.			Total.			Classification of those pensioned as "widows, &c."			
	Army.		Navy.	Army.		Navy.	Num-ber.	Money value.	Num-ber.	Money value.	Widows.	Minors.	Mothers.
	Num-ber.	Money value.		Num-ber.	Money value.								
Boston.....	1,703	\$839,565 91	41	\$23,216 27	499	\$378,514 56	10	\$22,486 72	2,172	\$1,263,683 46	69	1	335
Canandaigua.....	2,032	938,235 60	.....	.....	524	479,509 67	.....	.....	2,556	1,437,744 70	23	.....	402
Chicago.....	3,218	1,707,144 76	14	9,867 46	381	377,091 87	8	4,200 88	3,618	2,006,273 07	55	2	295
Columbus.....	3,422	1,570,010 36	4	1,678 73	496	478,190 55	.....	.....	3,922	2,058,980 64	76	4	387
Concord.....	1,537	712,534 94	15	8,677 92	856	682,909 21	9	6,907 50	2,367	1,410,272 01	10	.....	783
Des Moines.....	2,037	1,012,243 45	.....	.....	174	173,753 17	.....	.....	2,211	1,185,945 02	27	1	139
Detroit.....	1,538	730,013 99	3	2,213 47	214	205,409 46	2	1,456 53	1,757	939,063 25	13	1	192
Indianapolis.....	2,761	1,303,801 59	.....	.....	274	280,465 22	.....	.....	3,035	1,570,267 11	49	1	211
Knoxville.....	1,065	520,766 10	.....	.....	466	454,193 97	2	1,520 53	1,535	878,206 86	311	4	140
Louisville.....	1,700	366,460 01	.....	.....	257	200,046 08	1	1,300 57	1,949	631,431 06	101	1	183
Milwaukee.....	1,774	911,544 04	7	1,538 04	276	264,371 16	2	3,258 17	2,059	1,180,712 31	19	2	230
New York.....	2,144	1,025,435 15	63	37,127 73	396	367,426 49	9	11,600 37	2,571	1,441,795 74	67	1	280
Philadelphia.....	2,014	1,161,481 82	26	8,655 47	336	332,299 86	8	9,898 04	2,984	1,512,422 10	48	.....	282
Pittsburgh.....	1,690	837,943 64	2	979 00	331	315,458 80	2	1,529 67	2,215	1,155,902 50	21	1	273
Saint Louis.....	2,287	1,214,781 85	6	0,180 73	240	245,795 30	2	3,314 67	2,535	1,460,682 55	117	1	112
San Francisco.....	180	194,299 53	1	256 80	10	9,278 32	.....	.....	191	113,831 65	2	.....	0
Washington.....	2,464	1,141,467 21	85	17,770 33	203	264,762 88	7	6,532 81	2,504	1,450,463 83	97	.....	163
Total.....	33,150	10,126,677 75	210	122,944 35	5,967	6,556,947 85	68	74,098 08	39,301	21,860,006 61	1,116	20	4,505

There have been rejected of this class 21,900 claims.

Average per case. Of invalids, \$467.01, of widows, &c., \$948.67, of total number, \$558.72.

TABLE VI.—Monthly disposal of claims for twenty-eight months succeeding June 30, 1877.

TABLE 11.—Number of pensioners on the roll at the termination of each fiscal year since 1861.

For the year ending June 30—	Invalids.	Widows, &c.	Total.	Addition.	Reduction.
1861	4,337	4,290	8,636		
1862	4,341	3,818	8,169		467
1863	7,821	6,970	14,791	6,622	
1864	21,479	27,656	41,135	26,344	
1865	35,886	50,106	85,992	44,851	
1866	55,852	71,070	126,922	40,796	
1867	60,505	83,018	153,523	26,601	
1868	75,967	93,688	169,655	16,132	
1869	82,850	105,104	187,954	18,299	
1870	87,521	111,163	198,684	10,730	
1871	96,394	114,101	210,495	8,811	
1872	113,954	118,375	232,329	24,734	
1873	110,500	118,911	229,411	6,182	
1874	121,028	114,613	235,641		2,170
1875	122,980	111,832	234,812		1,426
1876	124,239	107,898	232,137		2,674
1877	128,723	103,381	232,104		38
1878	131,649	92,349	223,998		8,106
1879	136,615	104,140	240,755	16,757	

In the above are included those pensioned for service during the war of 1812; also the widows of the soldiers and sailors of that war.

REPORT OF THE COMMISSIONER OF PATENTS.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., October 20, 1879.

Hon. CARL SCHURZ,
Secretary of the Interior:

SIR: The following is a summary of the business of the Patent Office for the fiscal year ending June 30, 1879:

Applications for patents	19,300
Applications for design patents	697
Applications for reissue patents	639
Applications for registrations of trade-marks	1,465
Applications for registrations of labels	631
Caveats filed	2,674
Patents granted, including reissues and designs	12,471
Trade-marks registered	1,144
Labels registered	403
Patents withheld for non-payment of the final fee	828
Total receipts	\$703,146 79
Total expenditures	548,651 47

Receipts above expenditures..... 154,495 32

The aggregate of expenditures, amounting to \$548,651.47, includes the sum of \$5,000 specially appropriated by Congress for repairing the models damaged by the fire of September 24, 1877, which outlay was no part of the current expense of the office. Whether this item of \$5,000 be included in the current expense or excluded therefrom, the net revenue realized by the government from the operations of the Patent Office during the last fiscal year has only been equaled in a single instance since the office was established. That this increase in the revenue, which the government has obtained from the inventors, has resulted, not from an augmentation of the gross receipts, but from a diminution

of the expenditures, is shown by the following comparative statement of the receipts and expenditures of the last fiscal year and of those of the preceding year:

Year.	Receipts.	Expenditures.	Excess.
1877-'78.....	\$734,887 98	\$685,902 02	\$68,985 96
1878-'79.....	704,146 79	548,651 47	154,495 32

This decrease in the expenditures has been enforced by the reduction of the appropriations, which has been carried so far as seriously to cripple the office and injure the public interests.

The Constitutional provision which confers upon Congress power "to promote the progress of science and useful arts, by securing, for limited times, to authors and inventors, the exclusive right to their respective writings and discoveries," evidently imports, not that inventors are hateful monopolists to be taxed by the government, but that they are public benefactors to be encouraged and rewarded. That this is the true theory the experience of our people with their patent system, during the past century, abundantly proves, notwithstanding the exasperating annoyances which, in many cases, have resulted from patents improvidently granted by the office, unconsciously used by their owners, and unwisely adjudicated by the courts.

This being the Constitutional theory and also manifestly the just theory of the relation of the inventors to the public, it is alike unconstitutional and unjust to maintain in its present condition the legislation affecting inventors, by imposing upon them, in future years, the special tax which amounted, as has been shown, to the sum of \$154,495.32 during the last year. It is the obvious requirement of justice and of the Constitution that one of two things be promptly done, viz: either that the fees exacted from inventors be reduced to the amount which the patent system costs the government, or that the surplus be expended in improving the facilities for the prompt and thorough examination of their applications, and for the efficient performance of the other work which they pay the office to perform.

I respectfully recommend the latter course. The rooms occupied by the examiners are utterly inadequate to the requirements of the public service. Many of them are too unhealthy to be fit for any uses, except the storage of material. Each of the examining divisions needs two well-lighted and well-ventilated rooms. But in most cases a single small room is the only accommodation afforded for the entire examining division, including the clerks, with all the desks, models, drawings, and books required for the performance of their work. It necessarily results that each examiner is disturbed by the consultations of the other examiners with inventors and attorneys. The crowded condition of the rooms retards the transaction of business, and at the same time occasions much sickness as well as discomfort among the examiners and clerks. This entails serious loss upon the government and involves gross injustice to these officers.

A considerable number of clerks engaged on the production of manuscript copies from the original records of the office, are necessarily accommodated in a separate building. Under this arrangement documents of great value, which should be removed from the building under no circumstances, are daily carried back and forth across a wide street, at a risk of damage and loss to which patentees ought not to be subjected.

The government has already levied upon the inventors contributions nearly equal to the cost of the Patent-Office building. In the original statute providing for its erection, which was enacted July 4, 1836, it was ordered that the cost should be "paid out of the patent fund in the Treasury not otherwise appropriated." This would seem to have dedicated, at the outset, all the net revenue realized by the government from the Patent Office to the construction of the building. In 1849 and 1850 specific appropriations of the patent fund were made for the construction of this edifice, amounting to \$200,000. In addition, the government has taken from the inventors enough to make the aggregate net revenue from the Patent Office almost a million and a half of dollars. And yet this bureau is now restricted to a small part, which is also the worst part of the building, the best portions being occupied by the Land Office, the Indian Bureau, the Assistant Attorney-General, and the offices of the Secretary of the Interior. The Patent Office needs, and ought to have, exclusive possession of the entire building, excepting only those portions required for the uses of the Secretary.

Seasonable legislation looking to that end is imperatively required. But meantime some temporary expedients must be devised to increase the room at the disposal of this bureau. I recommend, as one of such expedients, the adaptation of a part of the third story of the west and north wings of the Patent Office to the present use of this bureau, by the construction of temporary partitions, which shall not in any way interfere with the plan adopted for the reconstruction of those wings; and that one or more elevators be constructed from the basement to the third story of the building.

The interests of the inventors and of the public demand additional clerks, in the several grades, and a considerable addition to the examining force, either in the present grade of third assistants, or in a new grade of fourth assistants, at a salary of \$1,200 per annum. I recommend that provision be made by law for ten additional clerks of class 1, three of class 2, two of class 3, and one of class 4; and for 15 assistant examiners, either of the third class, at a salary of \$1,400, or of a fourth class, to be established, at a salary of \$1,200 per annum. These salaries would amount in the aggregate to \$39,000, and would still leave a net revenue to the government, from the Patent Office, of \$115,495 per annum, of which a reasonable portion should be expended in an increase of the grossly inadequate compensation now paid to many capable and efficient employes in the grades of \$360, \$480, \$600, \$660, and \$720 per annum, in the restoration of the salaries of the principal examiners, and chief clerk, and in additions to the technical library of the Patent Office, which, instead of being stinted by inadequate appropriations, ought to be promptly raised to the rank of the best technical libraries of the world.

If the present system of requiring and preserving models shall be continued, before our second centennial an accumulation of more than two millions of models will require for their accommodation not less than fifty halls as spacious as those now used for that purpose. And long before our government shall have attained half the present age of the Government of England the entire Federal District may prove inadequate to the storage of the millions of models under which we shall be buried. The present system cannot be permanent. It will be wise to take the preliminary steps for a change without further delay.

The experience of the English demonstrates that their drawings, which conform to a higher standard than ours, are sufficient for such examinations as their system requires. But it is probable that even accurate

scale-drawings of the highest order of excellence, from working-machines, would not suffice for all of our examinations. Models are useful, in a larger proportion of examinations to inexperienced examiners than to those who have acquired the facility in reading drawings which experience gives; at the same time most of the applications involving complicated mechanism are assigned to experienced examiners by whom models are least required. At the present time models are actually used in the examination of about fifty per cent. of the aggregate number of cases examined by the entire corps, in which models are filed. It is not probable that a larger proportion of the models annually filed are required for the purpose of examination, or for any other legitimate purpose.

I recommend the enactment of the following statutory provisions as the first step in the right direction:

1. That no model shall be required or filed in any case unless upon a written certificate filed in the case by the examiner in charge of the division to which the invention pertains that it will be useful in the examination of the application, or upon the special order of the Commissioner.

2. That the Commissioner shall not require the production of a model for the examination in any case in which the applicant shall furnish satisfactory scale-drawings, made from a working-machine, and shall produce for examination a working-machine in operation in the city of Washington.

3. That upon the expiration of every patent, the model pertaining thereto shall be sent by the Commissioner to one of the public institutions of science and art in the United States.

It has been the practice of the Commissioner of Patents officially to certify copies of models for use in the courts. The model being a part of the application, this practice seems to be unavoidable. The rules and the law very properly require the model to be kept in the custody of the Commissioner. There are reasons why this custody should be strict and watchful. Among them is the danger of reissues fraudulently obtained upon altered models under the law which requires a reissue to be granted for an invention shown in the model, but through mistake or inadvertence not claimed in the specification. If the models are removed for duplication to the workshops of persons who are not employés of the Patent Office, they are inevitably and constantly exposed to the risk of accidental, if not fraudulent, alteration. The practice has been to intrust them to mechanics not sworn employés of the government. I recommend the enactment of a law authorizing the employment of skilled workmen to make copies of models for official certification, who shall take the oath of office and give bonds for the faithful performance of their duty in such penal sum as the Commissioner of Patents may prescribe, and shall receive from persons ordering copies of models such compensation as the Commissioner of Patents shall approve in each case, but shall receive no compensation whatever from the United States.

Testimony of foreigners required in proceedings in the Patent Office cannot be taken in foreign countries subject to the pains and penalties of perjury. It is a serious hardship for contestants in the Patent Office, whether citizens or foreigners, to be precluded from availing themselves of the testimony of witnesses residing in foreign countries. It is none the less a hardship for contestants, who themselves present testimony duly taken in the United States, to be placed at the mercy of foreign witnesses who may commit perjury with absolute immunity from pun-

ishment. The interests of American and foreign inventors, who are applicants before the Patent Office of the United States, would be greatly promoted by the enactment, by foreign governments, of laws providing for the execution of commissions, issued by the Government of the United States, to take testimony in foreign countries, to be used in the Patent Office of the United States, and for the punishment of perjury in such testimony. Indeed, similar statutory provisions for taking testimony to be used before the judicial tribunals of the United States would be of manifest benefit to the public. But such legislation cannot be asked of foreign governments unless proffered by our own.

I therefore recommend the enactment of a law authorizing the execution by United States commissioners, or other United States officers, of commissions issued by foreign governments to take testimony in the United States, to be used before foreign patent offices and before all judicial and legislative as well as executive departments of foreign governments, and to punish perjury committed in such testimony, such law to be operative only in favor of such governments as shall make like provision for taking testimony in foreign countries, to be used before the Patent Office of the United States and before all the judicial, legislative, and executive departments of the government.

The photolithographic work annually performed for different bureaus of the executive departments of the government has become large in amount and is very costly. That which is required for the Patent Office involves an annual expenditure of large sums of money, for which, as in other cases, contributions are levied on inventors. It seems just that inventors, to whom the progress of the useful arts in the United States, as elsewhere, is mainly due, should have the illustrated records of their labors kept always abreast of the highest development of illustrative art. The government has no right either to lower or to keep stationary the standard of photolithographic reproduction in order to avoid the reduction of its revenues from the inventors. Its duty is first to secure the best work and next to reduce the cost to the lowest point. The work ought to be done by employes of the government, who could have no interests in conflict with the attainment of the best and cheapest results, under the immediate supervision of the Patent Office, in the city of Washington, so that mistakes can be easily prevented and defects promptly remedied.

I recommend that a division be established in some one of the executive departments for the performance of this work for all the bureaus of the government which shall require it.

On the 14th day of March, 1879, I appointed a board, consisting of the Assistant Commissioner, the senior member of the board of examiners-in-chief, two principal examiners, and the chief clerk, to revise the rules and regulations of the Patent Office, and instructed them to consult with the other examiners during the progress of their work.

On the 31st day of May, 1879, I sent printed copies of their revision to the examiners' divisions of the Patent Office and to the offices of the clerks of the several United States district courts, and invited the examiners and assistant examiners and the attorneys practicing before the office to suggest amendments and criticisms of the proposed rules. Having received in reply many such suggestions, upon careful examination I adopted such as seemed to me to be judicious, and also made such other changes in the rules submitted as seemed proper, and submitted reprints of the revised rules to the examiners and other officers of the Patent Office, and to the attorneys practicing before the office, with a request for additional suggestions. A very large number have

been received. As soon as I shall have completed their examination and made such further changes in the proposed rules as shall seem to me upon further consideration to be necessary and proper, I shall submit the new rules and regulations for your approval.

The decrease in the number of patents issued during the last fiscal year, which was less by 1,629 than the number issued during the preceding year, undoubtedly results, to a considerable extent, from the completion, distribution, and extensive sale of the photolithographic copies of the drawings of the American patents granted prior to November 20, 1866, and to the distribution of English patents in the examiners' rooms for reference. The facilities for examination thereby secured to the examiners and to the public have expedited the work of examination and prevented the issue of many worthless patents. This distribution will be continued, but owing to the inadequacy of the clerical and laboring force available for the purpose since the extensive discharge of employes, necessitated by the exhaustion of certain appropriations during the last year, the work of mounting English drawings has been suspended for many months. The interests of inventors, of the public, and of the patentees alike demand the early completion of this work.

The specifications of patents issued prior to November, 1866, have not yet been printed. Copies of these specifications are constantly ordered. They are furnished in manuscript at great expense, and a large number of copyists are employed in the preparation of these manuscript copies. It will greatly promote the convenience of the public and the economical administration of the office to print these specifications.

I recommend an appropriation for that purpose of \$50,000 to be expended during the next fiscal year.

The general index of patentees extending from 1790 to 1873, which has been in preparation for several years, will soon be ready for the printer. I recommend an appropriation of \$10,000 for its publication.

The illustrations of the Patent Office Report of the year 1870 have not yet been printed. This deficiency in the reports ought to be supplied without delay in order to meet the constant demands from individuals and public and private libraries. The illustrations can be reproduced by the photolithographic process, at a cost of about \$6,000. I recommend an appropriation of that amount for the purpose.

I also recommend an appropriation of \$60,000 for the photolithographic reproduction of drawings destroyed by fire, to be made immediately available, so that the work may be pushed to completion during the current fiscal year.

The statutory provision now in force is to the effect that the final fee shall be paid within six months after the allowance of the patent, and also that the patent shall be dated not later than six months after its allowance. The result is that a patentee, who pays his final fee on the last day of the six months, is entitled to his patent on that day, if the law is to be literally executed. But it is a work of several days to print his specification and photolithograph his drawing. This difficulty has hitherto been avoided by the fiction of a new allowance made upon payment of the final fee too late to admit of the preparation of the patent before the expiration of the six months. The necessity for such a fiction ought to be obviated by so amending the law that its execution shall in all cases be possible. This can be effected by extending the period within which the patent may be dated to seven months from the date of its allowance.

part of the labor of the Census Office since its organization has been bestowed.

Second. The collection of certain classes of statistics for the current year has been going on since June 1.

There is, by the act of 1879, as by that of 1850, both a census day and a census year. The census day is June 1, 1880; the census year comprises the twelve months ending at that date. The census day is the day on or for which the count of inhabitants is required to be made, and certain facts relating to the status of population and industry to be obtained; the census year is the period for which certain other classes of facts, relating to the movements of population and the operations of industry, are required to be taken.

But while the act of 1879 and that of 1850 are alike in thus instituting a census year for the movements of population and industry, as well as a census day for determining their status, the two acts differ widely in the agencies they establish and the methods they prescribe for obtaining those results.

By the act of 1850, all the statistics to be obtained in the Census were to be collected by the regular enumerators in their house-to-house canvass of their several districts. The facts relating to mining, to the fisheries, to agriculture, to manufactures, to the mortality of the population, and to many other matters of social and industrial interest, were to be ascertained and reported on by the same officers who made the count of population.

The inadequacy and the inaccuracy of the statistics thus obtained, which were sometimes positively discreditable and even disgraceful to the Census, their only possible effect being to mislead the reader and misrepresent the country, led to the introduction of provisions into the act of March 3, 1879, by which the Census Office is authorized to withdraw certain classes of statistical inquiries from the ordinary enumerators and place them in the hands of experts and special agents.

In the spirit of this enlightened provision the Superintendent has carefully canvassed the field of investigation, with a view to ascertaining what parts of the field promise to yield results to such special inquiries of sufficient value, over and above what might be expected to be obtained through the ordinary course of enumeration, to repay the necessarily higher cost of the service.

In consequence of this inquiry several important investigations have already been set on foot, of which those involving the greatest amount of labor and expense are here indicated.

SPECIAL INVESTIGATIONS CONDUCTED BY EXPERT AGENTS.

I.—THE FISHERIES.

The statistics of fisheries have been a blank, or, it would be more proper to say, a blotted, page of the Census reports, ever since those statistics were first sought to be obtained, in 1850.

It is questionable whether the results obtained ever reached twenty, if indeed they ever reached fifteen per cent. of the actual facts.

The Census of 1870 reported a total value of products of only eleven millions of dollars, among the items being 647,312 bushels of oysters!

Statistics like these were only calculated to bring the Census into discredit, even when they did not have consequences of a more practical nature, as in the international arbitration at Halifax in 1877.

Under the provisions of the act of March 3, 1879, the Superintendent

in June completed arrangements with Professor Baird, Secretary of the Smithsonian Institution, and President of the United States Fish Commission, by which the scientific direction of a comprehensive investigation into the statistics of the fisheries and the fishing populations of the United States should be assumed by Prof. Baird, while the administrative charge of the service remained with the Census Office.

The details of the scheme having been arranged, a number of experts and skilled assistants, under the personal supervision of Prof. G. B. Goode, were put into the field in the early summer.

Special canvassers, well trained for such inquiries, were engaged to proceed in boats along the entire Eastern and Southern coast, from Maine to Texas, visiting every fishing port or fishing village, and collecting the whole body of social and industrial statistics of the populations engaged in this occupation, together with all facts of economic interest relating to the habits and the haunts of the several species of fish, the methods and apparatus of fishing employed, the labor systems in vogue, &c.

Other parties were engaged to canvass the Pacific coast, the Northern lakes, and the Western rivers, while special agents were engaged to work up the oyster fishery and to obtain the statistics of the fish markets of the principal ports.

Some of these parties have now been four months in the field. The character of the reports already received puts the success of this investigation beyond a reasonable doubt. Already large bodies of material are being compiled and tabulated in this office. The work will be actively prosecuted through the winter and the coming summer, until every portion of the field shall have been covered.

II.—THE MINING INDUSTRIES.

(a) *The precious metals.*—The Census statistics of the production of gold and silver have never possessed the slightest appreciable value, but, on the contrary, have always been erroneous and misleading.

At the Census of 1860 returns were obtained from 2,202 mining "establishments," and estimates were made of the product of 5,000 from which no returns were received. \$27,513,170 only of product was obtained from actual returns.

The product of the two years 1859 and 1860 had been estimated by the United States Commissioner of Mining Statistics at fifty millions of dollars in 1859 and forty-five millions in 1860.

Of the \$27,513,170 actually returned, \$10,135,000 belonged to two establishments in San Francisco County, California, employing together but 15 men, and paying but \$16,440 annually in wages. Of course, this means that these were simply refining and assaying offices. Making the proper deduction on this account, we have but \$17,378,170 of actual metallic product accounted for in the Census.

At the Census of 1870 special efforts were made to obtain accurate statistics of gold and silver production through the established agencies.

The result was slightly to increase the proportion returned, the amount reported being \$26,452,652 out of a production of \$61,000,000, as estimated by the United States Commissioner of Mining Statistics.

This last experience would have proved, even if the nature of the case had not abundantly shown, that a canvass by the ordinary enumerators of population must be utterly worthless. A more grotesque figure can scarcely be imagined than that of a man who knows nothing about mining attempting to extract the statistics of capital invested and product

obtained, from an operator who has his reasons for not telling the truth or any part of it.

Even to the eye of the expert, the *indicia* are few and the statistical tests nice and difficult. The unskilled enumerator becomes simply a butt for ridicule, imposture, and cheap miners' jokes.

Mining having been specially mentioned, in the act of March 3, 1879, as one of the subjects of special investigation, at the discretion of the Superintendent of Census, little hesitation was felt, in view of the facts and conditions recited, in organizing a service for obtaining the statistics of this department of the national industry. The creation, by act of Congress, at the same session, of the Geological Survey, seemed to offer a most fortunate opportunity. A complete understanding and agreement having been reached between the two bureaus, the scientific direction of the investigation into the gold and silver mining of the United States was undertaken by the Hon. Clarence King, Director of the Geological Survey, while the administrative charge of the work rested, as in the case of the fishery investigation, with the Census Office. The arrangement thus effected promises to be successful, not only in attaining great accuracy in the statistics collected, but in effecting much economy of expenditure, the skilled agents of the Census being often able to secure, without any additional expense, scientific information respecting the regions they visit for the use of the Geological Survey, and the agents of the latter bureau being often able, incidentally to their own work of exploration, to make extensive collections of facts, of both social and economical importance, for the use of the Census.

Parties have been in the field since July. Several of the principal mining regions of the West have been brought under investigation and I feel assured that it is already put beyond doubt that that portion of the reports of the Tenth Census which deals with the gold and silver product will be of the highest authority.

Especially in this period of universal monetary discussion, a complete economical survey of the mines of the United States producing the precious metals must be found of interest and value.

(b) *The non-precious metals and coal.*—Arrangements have been completed for a canvass by experts of the whole field of production of iron, copper, lead, and the other non-precious metals, and also of coal. The scientific direction of the work has been undertaken by Prof. R. Pumphelly, and the agents of the Census Office have been in the field since September.

III.—POWER AND MACHINERY USED IN MANUFACTURES.

By the act of 1850, no provision was made for obtaining the statistics of power and machinery employed in productive industry.

The omission was a grave one. The number of operatives engaged in any branch of the national industry, or in that industry as a whole, is merely one factor. The other factors are the amount of labor-saving machinery in use, and the amount of steam and water power applied to production. Given the fact that three millions of persons are employed in manufactures, what does this signify, unless it be known what is the aggregate horse-power of all the water-wheels and steam-engines by which their labor is assisted, which cannot at the present moment fall short of the lifting force of thirty millions of men, and may reach a far greater amount?

At the Census of 1870 the Superintendent, impressed with the importance of at least approximate statements on this subject, introduced an

inquiry into the manufacturing schedule respecting the kind of power in use in each establishment of productive industry, and the number of engines or water-wheels, with their aggregate horse-power. The returns to these inquiries were duly published in the reports of that Census, and constituted a valuable, as they were a novel, feature of those reports.

By the act of March 3, 1879, the Census Office is authorized to institute inquiries respecting—

The kind and amount of power employed in establishments of productive industry, and the kind and number of machines in use, together with the maximum capacity of such establishments, where the Superintendent of Census shall deem such inquiry appropriate.

As the inquiry into power and machinery is eminently one which requires not only technical knowledge, but high scientific training and wide observation, it has been determined to make this department of statistics the subject of a special investigation. Gen. W. P. Trowbridge, professor of engineering in Columbia College, New York, has been appointed the special agent of the Census Office for the purpose of this inquiry.

Trained assistants are already in the field, and the canvass is being actively prosecuted.

IV.—THE DEFECTIVE, DELINQUENT, AND DEPENDENT CLASSES.

The census act of 1850 contained provisions for collecting the statistics of the deaf and dumb, blind, insane, idiotic, and also of all criminals and paupers.

The reason for the special recognition of these classes, in preparing for a census, is fourfold; first, philanthropic, in order that the humane efforts made by individuals or communities for the protection and relief, and, so far as possible, the restoration to society, of the unfortunate classes, may receive intelligent direction; secondly, scientific, in order that the physiological laws which govern the appearance of mental and physical defects, and the social laws which govern the commission of crime, may be disclosed; thirdly, political, in order that the State may know what proportion of its citizens are incapacitated for military and civil service; and, fourthly, economical, in order that it may be known what is the burden laid by pauperism and crime upon productive labor, and what the extent to which exceptional physical infirmities and afflictions in classes of the population, as blindness, deaf-mutism, &c., create an exceptional liability to future pecuniary dependence.

But while the importance of a special enumeration of the defective, dependent, and delinquent classes was fully recognized by the act of 1850, no adequate agencies were provided.

A canvass by the ordinary enumerators of population alone will not succeed in ascertaining the numbers of the several classes, and will totally fail of obtaining those facts relating to their condition which are essential to anything like a just view of the subject.

At none of the three censuses taken under the act of 1850 have the numbers of a single one of these classes been accurately determined. In respect to some, not even an approximation was afforded. It has been exceedingly difficult for the most highly-trained specialists to draw any valuable deductions from the partial and fragmentary data obtained, while the legislator and administrator and the public generally were likely to be misled, rather than instructed, by the figures contained in the census tables devoted to these classes of the population.

In this view, both of the importance of the subject involved and of

the insufficiency of the agencies hitherto employed, advantage has been taken of the provisions of the act of 1879 to initiate a systematic investigation, under expert direction, of the whole field of the defective, dependent, and delinquent classes.

Mr. Fred. H. Wines, for ten years the secretary of the Illinois Board of Commissioners of Public Charities, has been appointed the special agent of the Census Office, and has undertaken an inquiry which for breadth of plan and fullness of detail leaves nothing to be desired.

If a moderate success be realized, of which I feel confident, the statistics will be far in advance of anything secured at any preceding census.

If this scheme can be carried out to a complete result, of which I have hopes, the information obtained will have a value which it would be difficult to express.

V.—THE SOCIAL STATISTICS OF CITIES.

In 1790 one-thirtieth of the population of the United States lived in cities of 8,000 inhabitants and over; in 1800, one twenty-fifth; in 1810 and also in 1820, one-twentieth; in 1830, one-sixteenth; in 1840, one-twelfth; in 1850, one-eighth; in 1860, one-sixth; and in 1870, a little over one-fifth.

At the last date the inhabitants of cities numbered in all 8,071,875.

It is probable that not only the absolute number but the proportion of the total population resident in cities will be found in 1880 to have still further increased. It will not be surprising if 12,000,000 of persons, constituting a full quarter of the population, are found living in cities of 8,000 inhabitants and over.

The fact that such vast numbers are brought within limited areas not only offers an opportunity for pursuing statistical inquiries which it would be very difficult if not impossible to extend over the whole country, but it also creates a legitimate demand for additional information respecting such communities, inasmuch as they are, by the nature of city life, made subject to vital conditions widely different from those of the population generally. Moreover, the very existence of a city indicates the presence of manufacturing and commercial enterprises, which especially require careful and technical treatment in a census.

For all these reasons it has been deemed best to constitute a department of the Census which should be charged with collecting and co-ordinating the social statistics of cities, including all subjects proper to the inquiry.

The appointment of special agent in this department has been accepted by Col. George E. Waring, jr., of Rhode Island, and a large amount of material of a wide range has already been collected and is in process of reduction.

VI.—STATISTICS OF SPECIAL BRANCHES OF MANUFACTURE.

The manufacturing statistics of the Census have not been subject to such overwhelming condemnation as was visited upon the statistics of mining and the fisheries, but they have never been above severe criticism on account of the inadequacy and often in a high degree the inaccuracy of the returns.

Of the manufacturing establishments returned at the Census of 1870, the statements respecting 80,000, in round numbers, were found so deficient or so manifestly erroneous that correspondence was required before they could be taken up for tabulation.

The labor and expense of such a service were enormous, and yet there

remained at the last the reasonable suspicion that errors, not large enough to be detected with certainty in the individual, might have reached a height in the aggregate to cause a serious departure from the facts of the case.

In the inquiry, what branches of manufacture should be taken up at the Tenth Census for special investigation, the question of cost has necessarily been the determining consideration.

There is no branch of manufacture the statistics of which would not be improved by a special canvass, but there is a wide difference between the various branches as to the degree of improvement which might thus be effected, and also as to the expense of such a service.

The following is the list of special agents appointed for this purpose:

Edward Atkinson, esq., of Boston: The Manufacture of Cotton.

George William Bond, esq., of Boston: The Manufactures of Wool.

Prof. J. S. Newberry, of New York: The Building Stones of the United States, and the Quarrying Industry.

James M. Swank, esq., of Philadelphia: The Manufactures of Iron.

John Lynch, esq., of Portland, Me.: Ship Building.

J. D. Weeks, esq., of Pittsburg: The Manufactures of Glass and of Coke.

W. C. Wyckoff, esq., of New York: The Manufactures of Silk.

Prof. C. S. Sargent, appointed to report on Forestry, also takes the statistics of the Lumbering Industry.

VII.—STATISTICS OF SPECIAL BRANCHES OF AGRICULTURE.

In general, the statistics of agriculture can be collected only by the enumerators of population in making the tour of their districts.

Manufactures are usually concentrated in considerable villages or cities, so that a special canvass becomes comparatively easy and inexpensive.

But it would involve a vast increase of the cost of the census were special officers, distinct from the enumerators of population, to be appointed to collect the statistics of the two and a half or three millions of farms in the United States.

Nor does the same reason for a special canvass exist in the case of agriculture, as of manufactures, mining, or the fisheries. In agricultural districts the enumerator is likely to be a farmer, or at least farm-bred, and thus to know enough about such matters to be able to fill the schedules intelligently.

At the same time, it has appeared to the Superintendent that the occurrence of the census affords an admirable opportunity for securing certain large classes of facts relating to land systems, labor systems, modes of culture, applications of machinery, &c., in agriculture, wholly in addition to the bare statistics of the crops produced, which, if justly collated, corollated, and illustrated, cannot fail to be of great interest and value.

In this view, several special investigations of wide range have been undertaken, and others will be set on foot as a favorable occasion shall offer.

The following is the list of experts and special agents appointed in this department of the Census:

Prof. E. W. Hilgard, University of California: Cotton Culture.

Prof. W. H. Brewer, New Haven, Conn.: The Production of Cereals.

Prof. C. S. Sargent, Brookline, Mass.: Forestry.

J. R. Dodge, esq., Washington, D. C.: Orchard Fruits, Tobacco, Hops.

Clarence Gordon, esq., Newburgh, N. Y.: Meat Production in the grazing States and Territories.

Professor Hilgard is assisted by a number of eminent agriculturists and geologists. Several States are being traversed for the purposes of the most thorough and exhaustive investigation of the conditions and methods of the cultivation of cotton yet undertaken by any government or association. Mr. Gordon has been in the field since July. The other branches of agricultural inquiry have more recently been set on foot.

VIII.—MORTUARY STATISTICS.

But the chief effort made for the collection of statistics relating to the census year, in advance of the occurrence of the June enumeration, though not one requiring the appointment of an expert or special agent, has been in the direction of a mortuary record, to be kept by physicians and surgeons, of cases of death occurring in their practice.

The United States are at a marked disadvantage, in comparison with almost any other civilized nation, in the matter of vital statistics. We know not the number of persons born or dying in any year of our political history.

The registration of births, marriages, and deaths, which in other countries is rigidly enforced by adequate provisions and sanctions of law, is in some States not even required by statute, while in only three or four of the States which maintain a formal registration, is the service of such a character as to give any considerable value to the results.

Mere provisions of law will not secure good vital statistics. There must be vigilant administration by expert and thoroughly trained officials, heavy penalties for delinquency, and a disposition of the public mind which will not only allow but demand the relentless enforcement of the law. It is only when it is popularly seen and appreciated that no one can be born into the community or die out of it without affecting the rights and interests of every preceding or surviving member that adequate legislation and adequate administration will be provided for recording all the essential facts relating to the beginning and the close of every life.

Outside the three, or at the most four States, above alluded to as maintaining a good system of registration, there are perhaps a score of cities which keep up something like a system of recording births and deaths, of which six or seven have established a reputation for the completeness and accuracy of their published reports.

For all the rest of the country there is either no statistical information at all respecting the number of those who are born or die during any given period, or the statistics are palpably defective.

The disadvantage to the United States arising from the lack of good vital statistics is most serious. Not to speak of the unenviable singularity which it gives our country among the civilized and progressive nations; not to speak of the uncertainty in which it involves our sanitary legislation and administration, or of the loss which the science and practice of medicine suffer from the absence of trustworthy information respecting the range and degree of virulence of certain fatal diseases and the rate of mortality in one section as compared with its neighbors; the mere pecuniary disadvantage at which our people are placed, in the important matter of life insurance, would, if truly estimated, far outweigh the whole first cost of good vital statistics. Hundreds of millions of dollars have been invested in life insurance in this country within the

last thirty years, and yet we have not even an approximate life table* of the United States. Insurance companies do not know how much they should charge to be safe; the people do not know how little the companies should charge, to sell insurance at its fair value. All parties are and have been operating in the dark in the matter of interests involving enormous expenditures and receipts, for lack of information which only government can supply, and which in almost all other progressive countries government does supply.

In partial recognition of the importance of mortuary statistics, the act of May 23, 1850, required the return, by the canvassers of population, of all deaths occurring during the census year; and if the provisions of the law had been adequate to its intent, the results would have been of great value, even though the facts were obtained but once in ten years.

In truth, however, the statistics of mortality obtained through the census have always been defective and often grossly misleading. In the Seventh Census, 1850, there were returned but 324,394 deaths from a living population of 23,191,876; in 1860, 394,153 deaths from a living population of 31,443,321; in 1870, but 492,263 from a living population of 38,558,371.

It does not need to be said that such a ratio of deaths to living population is maintained in no considerable community of the world. Mr. Elliott estimates that in 1870 41 per cent. of the deaths occurring during the census year escaped record.

The causes of such wholesale omissions in a periodical enumeration may be stated as follows:

In some cases the canvassers fail to put the question; in others, heads of families, or persons answering for them, fail to recall the fact of a death occurring during the year, especially when ten or eleven months have already elapsed since the date of death, and the mind, not unnaturally, refers to the event as having taken place a year or longer before. In still another large number of cases persons die out of families, which class seems not to have been in contemplation of the census law, which makes the return of mortality a family return. In still other cases deaths occur in families, but the very death itself breaks up the family and scatters the surviving members, leaving no one to report the death in the census. In still other cases deaths occur in what are constructively families for the purposes of the census, i. e., boarding-houses, hotels, &c., but the common tie of membership or association is here so casual and so slight that the chances are altogether against the circumstance being retained in memory six or eight months after.†

In the provisions for obtaining vital statistics, the act of 1879 differs from that of 1850, first, by allowing the registration of deaths, under State or municipal authority, to be substituted at the discretion of the Superintendent for the returns of enumerators; and, secondly, by placing it in the power of the Census Office to supplement the strictly official agencies by information derived from other sources. In view of the great importance of the subject, the earliest effort made after the organization of this office was in this direction. A small register was prepared sufficient to contain the record of twenty-four deaths, with a statement of the causes of death, the sex, age, occupation, and nationality of the deceased. A copy of this register was sent to every physician and surgeon, of whatever school, whose address could be obtained by the Census Office, with the request that the recipient would preserve therein a record of all deaths occurring in his practice during the

* I speak with all respect of the effort made by Mr. E. B. Elliott to construct such a table for the Statistical Atlas of the United States, in 1874. Mr. Elliott's effort was most praiseworthy, and his qualifications were equal to almost any task, but the fatal deficiencies in the information attainable would not allow success.

† Reports of Ninth Census, vol. on Vital Statistics, pp. 192, 193.

census year. The most laborious correspondence was resorted to in order to form and perfect the list of physicians and surgeons for this purpose. Nearly 100,000 of these registers have been thus distributed.

The response of the medical profession to this appeal has been most gratifying. Even while the list was being perfected, letters were received from hundreds of physicians offering co-operation, and asking to be furnished with a copy of the projected register.

Almost without exception the medical journals and medical associations of the country, of all schools and names, have commended this effort, and urged their readers or members to contribute towards its success.

The Superintendent cherishes the hope, which, he believes, is not beyond the reason of the case, that this scheme will secure a vast amount of information relative to the vital conditions of our country, which, under judicious treatment, will yield results of high scientific and practical value.

THE COUNT OF THE PEOPLE.

With respect to the house-to-house enumeration of the population, which is the primary and principal object in contemplation of the law, the act of March 3, 1879, makes a wide departure from the methods previously in use.

The more important changes may be briefly stated as follows:

1st. In the stead of adopting, as the units of supervision, districts (judicial districts) formed with reference to other and altogether different purposes, districts are to be formed wholly and simply with reference to the requirements and exigencies of enumeration.

2d. The number of such districts is increased to 150, more than double that of the judicial districts, securing a higher degree of local knowledge in preparation for the enumeration, and rendering possible a minuter supervision of the work while in progress.

3d. In the stead of imposing the duty of supervision in the districts, when formed, upon a class of officers (marshals of the United States courts) selected with reference to other and widely different services, and, in a large proportion of instances, crowded to the limits of their time and strength by prior official duties, officers (supervisors of census) are to be appointed solely with reference to their qualifications for the special and highly technical work of the census.

4th. The subdivision of the census districts for the purposes of actual enumeration is carried far below that required by the act of 1850, the maximum limit being now 4,000 inhabitants (according to the next preceding census) as against 20,000 formerly, and the Census Office being empowered to require a still minuter subdivision of the territory, if the good of the service shall seem to require it. By this change a high degree of local knowledge on the part of the actual canvassers is obtained as a security against defective and erroneous returns of the population.

5th. The period allowed for the enumeration is shortened to one month (the month of June) in rural districts and small towns, and to two weeks in cities, as against five months formerly. This change must result in obviating a large part of the errors resulting from the incessant movements of the population, especially during the later summer months.

6th. The appointments of the actual canvassers (enumerators) are made subject to the approval of the Census Office, a measure absolutely essential to good administration, but strangely overlooked in previous legislation.

7th. Instead of an inflexible rule for determining the compensation of canvassers, which did not recognize the difference in the labor of enumeration caused by the geographical features of the country, and which

treated a square mile of river bottom or prairie as the exact equivalent of a square mile of rugged mountain, traversed only by broken roads and bridle-paths, the act of 1879 places the matter of compensation, so far as the canvassers are concerned, in the discretion of the Department which is thus able to combine the economy and efficiency of the service with justice to the persons engaged.

8th. The act of 1879 authorizes, at the discretion of the Superintendent, the use of "prior schedules," or blank forms distributed in advance to be filled up with deliberation and after consultation between the members of a family; whereas, under the former system of enumeration the canvasser, in the tour of his district, generally obtained the information from one member, not, as a rule, the head of the family, who was unadvised in advance of the subjects of inquiry, and was called upon to answer hastily a large number of questions relating to several different persons.

The changes of system which have been noted vastly increase the work of the Census Office in making the preparations for the enumeration, but no one should be deemed fit for such a charge who did not rejoice in the added labor and care, in view of the manifold advantages to be obtained.

THE CENSUS LAW.

In making these preparations, through the six months that have elapsed since the organization of the service, the Superintendent has become more and more fully confirmed in the opinion that the legislation of the last Congress on the subject of the census was wise and salutary. Not a single fundamental defect in the scheme of enumeration has appeared, nor has any important change occurred to the Superintendent as likely to result in an improvement of the service.

In two minor matters, strictly matters of detail, it is deemed proper to request supplemental legislation; these are—

1st. The extension of the privilege of free transmission through the mails to matter directed to the Census Office, in answer to its inquiries or in compliance with its requests.

2d. The abandonment of the interrogatory relating to the ownership of the public debt.

The first of the proposed provisions would simply obviate the necessity of one department of the government paying to another department considerable sums in postage on the public service, involving the keeping of unnecessary accounts and an increase of the apparent cost of the census.

The second would result in removing from the course of the enumeration what is likely to prove a not inconsiderable obstacle. The inquiry respecting the public debt can possibly have no valuable result, inasmuch as the great proportion of these obligations are held by public institutions, banking and insurance corporations, charitable trusts, &c. so that were every householder to answer the question correctly, the information obtained would be partial and fragmentary, accounting for but a part of the body of the debt.

But, secondly, it should be remembered that, in spite of the scheme of "prior schedules" in any degree to which it is likely to be used by the Census Office, the questions on the census schedules will often have to be answered by the women of the family in the temporary or protracted absence of the head thereof.

Usually it may be assumed that the wife or daughter knows little or nothing respecting the investment of the family property, and, even in the cases where the knowledge existed, would hesitate to answer on such a point without the consent of the head of the family. It is

fundamental maxim of enumeration that as few matters as possible should be introduced in the house-to-house inquiry, respecting which the wife and the grown daughter cannot be assumed to be equally intelligent with the husband and father.

Thirdly, even when the head of the family is present, the inquiry respecting property in United States bonds is unlikely to secure trustworthy answers, and is certain to provoke distrust and engender animosity.

On every account, therefore, the Superintendent deems it desirable that the interrogatory should be stricken from the schedule.

COPIES OF THE SCHEDULES.

The question having been raised whether a copy of the returns provided for by the act of March 3, 1879, should not be made, I desire to present the elements of the case, and leave the matter to the decision of the Department, or of Congress, the question being, after all, rather political than statistical.

By the act of 1850 it was provided that two copies of all returns should be made, the original schedule to be filed in the office of the clerk of court of the county to which the returns related; one copy to be filed in the office of the secretary of state for the State to which the returns appertained; the second copy to be forwarded to the Census Office at Washington, for its uses, both of compilation and of record.

This provision was complied with in 1850 and in 1860. Prior to the Census of 1870 the undersigned, as Superintendent, had the honor to recommend that one of the two copies provided for by the act of 1850 be dispensed with in the approaching enumeration.

The reason given for this recommendation was that a copy of a body of schedules so vast in extent was only to be made at a great expense, and that, in fact, the set of the returns deposited in the county clerk's office was not only useless, but mischievous, being subject, on account of proximity to the individuals and families enumerated, to curious or malicious examination. This recommendation was not followed by legislation, and at the Census of 1870 two copies of the returns were made as at 1850 and 1860.

In the draft of a bill submitted with my report of 1878 upon the expediency of new legislation with reference to the approaching Tenth Census, a copy of the returns was provided for, one set of the returns to be deposited with the secretary of state of the State to which the returns related; the other, either the original schedules or the copy, as the Census Office might elect, to be forwarded to Washington.

In the census act, however, as it passed Congress, and received the approval of the Executive, no copy of the returns is provided for; but the original schedules, as filled by the enumerators, are to be sent to Washington.

The question now raised is, whether it is expedient thus to dispense with all copies of the census schedules, and trust alone to the originals for all the purposes of the government respecting the enumeration.

The use of a copy of the schedules, if this were to be made, would practically be wholly in the nature of insurance. The resort to the schedules, as deposited in the offices of the secretaries of state for the several States, is likely to be, in general, for the most trivial purposes, and, at the best, infrequent and unimportant.

In some of the States, as I have learned through the personal inspection of officers of this Bureau and by correspondence, the schedules of

1850, 1860, and 1870 are not preserved in shape and place to be accessible to visitors; in others they are, in fact, seldom or never visited.*

So vast and cumbersome is such a body of manuscript, that any information which a citizen might desire to derive from the returns could be given by one of the trained officers of the Census Bureau at Washington with far less effort and with far greater accuracy than by a person unfamiliar with such research, looking, for himself, through the schedules at the State capitals; and it may properly be said that the Census Office cheerfully affords, upon personal application, all information which it is deemed proper to extract from the schedules.

Taking the whole country together, therefore, it does not appear to me that the great expense of making a copy of the returns would be justified by the uses which such a copy, in the several States, would serve.

Were it to be provided that every State should receive a copy of the returns on paying for the expense thereof, I do not believe that a single State would incur this expenditure.

The only use of a copy of the returns which seems to be worth much consideration is that which could be made of it in the event of the destruction or loss of the original schedules, during transmission to the Census Office at Washington, or after receipt there.

As, in the nature of the case, there is, in greater or less degree, a danger of such destruction or loss, it is perhaps worth while to state the economical relations of the subject.

The two copies of the census schedules of 1870 cost, at the rates provided by the act of 1850, \$192,660, being at the rate of \$96,330 for a single copy. This amount was exclusive of the additional compensation given under the provisions of the acts of March 3, 1871, April 20, 1871, and the joint resolution of June 9, 1870, which will, in the present discussion, not be taken into account. If the population, the farms, the shops, &c., of the country shall, as is probable, be found to have increased 25 per cent. in the interval between 1870 and 1880, the cost of making a copy of the returns would not be less than \$120,000.

If to this we add the cost of paper, printing, and distribution, the cost of a copy would not be less than \$130,000, and might easily be found to be greater, as in the event of a large increase of population, &c. This, then, may be taken as the minimum cost of the insurance in question.

The danger to be apprehended from the destruction or loss of the schedules during transmission to the Census Office could not be held to justify the expense of a copy. Such destruction or loss could not be supposed to extend further than to small fractional portions of the returns.

At the Census of 1870, reaching from Maine to California, and from the Lakes to the Gulf, not a page of the schedules failed to come to hand, nor was the Census Office obliged to resort for a single statistical fact to the schedules deposited with county clerks or secretaries of state.

Should, however, the entire returns of twenty counties of average population be lost, the expense of a re-enumeration would not exceed one-sixth, or, more likely, one-seventh of the cost of a copy.

The only danger which appears to the Superintendent as possibly justifying the incurring of so considerable an expense for the insurance of the returns, is that of their accidental destruction by fire, after their

* The State of Rhode Island is the only one, so far as I have ascertained, in which the census schedules are frequently consulted. With a population small in the aggregate, and more compact than that of any other State, with a strong interest in antiquarian and statistical research diffused among its people, and with a very systematic and well organized State census, taken in the intervals of the United States censuses, the people of this highly intelligent commonwealth are reported to make a not inconsiderable use of the class of records in question.

receipt by the Census Office at Washington. Such a destruction, total or partial, might of course occur. That not a page of the schedules of any census, beginning with that of 1790, has yet been lost at Washington, affords no certainty of the safety of the incoming schedules. The question simply is, whether the insurance proposed is worth its cost.

The actual expense of enumeration, exclusive of the cost of organization, preparation, supervision, and the compilation of results, and excluding also the cost of the special services and expert agencies provided for by the act of 1879, may be roundly taken at \$2,000,000.

Looking at the schedules simply as property representing this amount of value, \$130,000 seems a very high rate of insurance for the few months at the close of which, if the plans of the Superintendent are carried out, all the purely political statistics of the census, those, that is, which contain the population of States, counties, cities, and towns, with distinction of age and sex, color, nationality, occupation, &c., will be compiled and made ready for publication. A very small fraction of this expenditure would suffice to make such exceptional and extraordinary provision against all unfavorable contingencies as would reduce the danger of destruction by fire to a minimum, except only in the event of a general conflagration of the city.

But I have no interest to argue against the proposition for a copy of the schedules adversely. The law as it stands, in this regard, represents the desire of Congress to effect a large saving of expense.

The question is not so much a statistical as a political one. If it be felt that, on a matter so fundamental in our political system as the taking of the decennial census for the apportionment of representation among the States, considerations of economy should be strictly subordinate, this Office has no objection whatever to interpose. On the contrary, such a provision would relieve the Superintendent of a certain degree of anxiety which, in spite of every precaution, will inevitably attend the custody of the returns if no duplicates of them anywhere exist.

In case provision be made for a copy of the returns, it should be accompanied by an appropriation of the amount necessary to be so expended, not to exceed \$150,000.

Very respectfully, your obedient servant,

FRANCIS A. WALKER,
Superintendent.

Hon. C. SCHURZ,
Secretary of the Interior.

REPORT OF THE ARCHITECT OF THE UNITED STATES CAPITOL.

ARCHITECT'S OFFICE, UNITED STATES CAPITOL,
Washington, D. C., October 1, 1879.

SIR: Relating to the public works under the charge of the Architect of the Capitol, I have the honor to make the following report:

CAPITOL.

Since the date of the last annual report from this office, many and important changes have been made, particularly in the southern portion of the building.

In accordance with plans recommended by the board having in charge the ventilation of the House of Representatives, and approved by Congress by act passed March 3, 1879, the Speaker's, Sergeant-at-Arms', and reporters' rooms at the south of the hall of the House of Representa-

tives have been converted into one room, and by means of large openings into their north wall have been thrown open to the corridor between them and the hall, thus making a large, light, and airy retiring-room for members. The blank doorways in the south wall of the gallery have been opened, and the rooms and water-closet in that portion of the building arranged to suit this modification. To provide accommodations for the committee and the officers thus dispossessed, several room under the old hall of Representatives have been fitted up, and the folding department, formerly occupying these rooms, transferred to the cellar below.

Considerable work has been done in this story in preparing for the reception of the documents to be folded and stored there, and to provide space for the working-room of the folders, a portion of which has been made comfortable for that purpose by putting in wooden flooring. It has been shelved and otherwise arranged for the reception of books and documents. A lift is being put in for the convenience of handling the matter to be stored there. This arrangement will confine the entire folding department to the cellar, and thereby prevent the obstruction of the corridors with books and folding-tables as formerly, and will also do away with the running of trucks over the tessellated floors, which has caused great injury to them, and even to the walls and interior columns of the building.

A new steam-pump, condenser, and small boiler have been placed in the basement. The latter will obviate the necessity for running the large boilers in the summer when steam is required only for pumping, thus saving both fuel and labor.

The recent fire which occurred in a room in the cellar story, filled with scrap-paper, gives additional force to the recommendation in the last annual report from this office in relation to the insecure condition of the roof and floor of the old hall of Representatives in case of fire. The semicircular wall of this room is made of wooden studding, covered with laths and plaster; and the floor of the gallery and the ceiling of the document-room being also of wood. In these rooms there is always a large amount of paper liable to take fire from the same cause of the recent fire, and I think prudence demands that measures should be taken at once to prevent this danger by removing the wooden portion of the hall and substituting that which would be fire-proof.

While a large air-duct is being constructed, and ample means made for the supply of fresh air in the hall of the House of Representatives, it is important that measures be taken to secure for it wholesome air. It has been suggested to plant, thickly, with trees, the strip of government land running from the Botanical Garden to the government reservation at the junction of New Jersey and Virginia avenues. This strip of land lies between the Capitol and the direction from which the malarious winds come, and if this belt be thickly planted, as proposed, it would in a great measure deflect or purify, in part, the air, as in particular seasons of the year the objectionable currents of air, in a sanitary point of view, come from this quarter. In my opinion a wooded belt between the source of this malarial air and the Capitol would greatly improve the salubrity of the air furnished to the halls.

This measure I consider the most important step that can be taken to procure purer air for the hall than is now to be obtained at all times.

The building generally has been kept in good repair. In the northern portion of the building the water-closets have been changed in such a manner as to effect a downward draft through the hoppers.

The brick floors have been taken up from the consulting-rooms of the Supreme Court and wooden floors substituted. These rooms, together

with the bathing-room and passage connected therewith, have been painted and otherwise refitted.

Such is the demand for rooms that last session it was necessary to fit up the frame building at the corner of Delaware avenue and C street, which was formerly occupied by the Architect of the Capitol, for the accommodation of committees of the Senate. This, together with the fact that in many rooms two, and in one room three, committees are meeting, show the necessity for more rooms being added to the Capitol building, and architectural propriety suggests that the center portion of the building should be projected at the eastern front.

GOVERNMENT PRINTING-OFFICE BUILDING.

As provided by the act approved March 3, 1879, a fire-proof extension has been erected to this building, which consists of two parts: one 60 feet by 60 feet, the other 86 feet 8 inches by 53 feet 8 inches, with a corridor connection with the old building 10 feet by 12 feet, the whole four stories high.

The lower portion is already occupied as a storehouse and machine-shop, and the upper stories are being fitted with tables, cases, &c., for the printers and binders.

The whole will be completed and occupied before the meeting of Congress.

LIGHTING THE CAPITOL AND GROUNDS.

It will be seen by the accompanying report of Assistant Engineer J. H. Rogers, electrician of the Capitol, that by means of the dynamo-electric machines recently put in operation the voltaic battery, formerly used for lighting the hall of the House of Representatives and the rotunda, has been superseded.

It gives me pleasure to state that Mr. Rogers has made some advances in his experiments towards perfecting a constant, steady, and desired light.

Owing to the reduction of the estimates for gas-lighting and to the fact that an additional session of Congress was called, that was not provided for in the estimates for gas, there remains unpaid to the gas company the amount of \$2,898.24.

Mr. Rogers in his report says:

As required by the act passed March 3, 1879, dynamo-electric machines have been purchased, viz: Three machines, together with the necessary attachments, including the fitting up of steam-engines, for the sum appropriated. Two of these machines are set in the basement of the south wing, and one about to be placed in the basement of the north wing. By use of these it has been demonstrated that the gas-jets in the two halls and rotunda can be ignited, thus throwing out of use the voltaic battery, which has been run heretofore at a heavy annual expense.

Experiments are now being made with a view to lighting the hall of the House of Representatives by the electric light. We have succeeded in overcoming the difficulties of the steglamite, that of the crater, and also that of preserving equidistance of the electrodes, and now only a slight flickering remains, which we hope soon to overcome.

Such is the sensibility of the eye to the flickering rays of light that we hesitate to apply the electric lights in the halls of legislation in its present comparatively imperfect state.

CAPITOL GROUNDS.

The work on the Capitol grounds has progressed favorably, as may be seen by the following report of Mr. H. F. Cobb, engineer:

"In submitting the annual report of the improvement of the United States Capitol grounds, carried on under the direction and according to the plans of Frederick Law Olmstead, I beg to say in general that the works thus far completed have proved to be well executed and of good material.

"The pavements upon the east front were cracked in several places during the severe cold of the early winter, owing to the unequal contraction over the large surface, but no permanent injuries were sustained.

"The condition of the trees and plants is satisfactory. Most of the shrubbery is well developed, and the lawns are in good order.

"The laborers have been kept at work on half-time during most of the year, in order to distribute the appropriation for labor among as many as possible.

"The permanent improvements added since the last report have given much of the park the appearance of completion, and the work now in progress will add still more to the general effect. No new road pavements were laid during the present year. The work upon the footwalks has progressed steadily, and the most important have been paved with artificial stone.

"The main approach from Pennsylvania avenue is now being finished as far as the lower plaza, by carrying forward the design in mosaic previously adopted. Maryland avenue has been commenced in a similar manner. The remainder of the walks are of a plain pattern.

"During the year there has been laid 968 square yards of mosaic and 11,500 square yards of plain work. Most of this is in excellent condition.

"The stone screen wall along First street west has been extended around the Maryland avenue entrance. This work in general design corresponds with that already built, but certain details have been changed as improvements suggested themselves. The work has been done in a very creditable manner.

"Red granite lamp-piers have been placed at the carriage entrance leading eastward from Pennsylvania avenue Circle. These are to be surmounted by bronze lanterns of appropriate designs.

"The low rustic wall, bordering a portion of the east park, has been extended entirely around the northern boundary. The design has been varied to conform to the requirements of each entrance, keeping the same general appearance. The material for both this and the south New Jersey avenue entrance comes from Maine.

"The entrance at New Jersey avenue is similar in character to the remainder of the work, but slightly modified in details.

"The coping and walls along the sides of Pennsylvania avenue walk are now under contract, and will be finished during the present season. These, with the steps in process of erection, will complete this approach as far as the plaza connected with the proposed western entrance to the Capitol.

"All the stone work erected during the present year has been contracted at a very low figure, in every instance falling within the estimates.

"The corners at Maryland and Pennsylvania avenues, purchased to complete the circles at these points, were put in possession of the United States November 25.

"The work of demolition on Pennsylvania avenue was commenced immediately and the roadways extended.

"Considerable work has also been done on Maryland avenue. The circle has been outlined, and the walks finished, but it will be necessary for the railroad tracks to be changed, the roadway paved, and the interior circle completed before the designed improvements will have been carried out.

"A large amount of shrubbery and plants has been purchased, as will be seen by reference to the accompanying tables of expenditures.

"Bronze lanterns of suitable designs are now under contract for the

walk entrances at Pennsylvania and Maryland avenues, the carriage entrance at Pennsylvania avenue, and the several entrances along B street, N. W. It is expected that these will be placed in position before November 15.

"The air-duct leading from the southwest ground to the House of Representatives is rapidly approaching completion. The work is thoroughly done and the best materials used. The air-shaft, to be constructed of rock-faced ashlar, bonded with molded courses of dressed granite, is now in process of construction and will also be completed before the assembling of Congress.

"The intercepting sewer along west B street commenced last year has been finished, and the grounds are complete in this respect.

"In extending the air-duct to the place selected, the line intercepted the main sewer leading from the House of Representatives. This was accordingly changed, and 314 feet of connecting sewer built at a cost of about \$950.

"A very marked improvement is noticed in the good order upon the grounds since police have been introduced. No disorders have occurred and but little damage has been sustained by depredations."

The subject of the grand stairways and terrace at the western front merits the attention and favorable action of Congress.

THE BOTANICAL GARDEN.

The buildings at this place have been put in good order and the portions of the heating apparatus out of order have been repaired, and two new boilers furnished.

Various rockeries have been constructed under the supervision of Mr. William R. Smith, the superintendent.

The grounds on the south of Maryland avenue connected with this garden have been improved by shade-arbors and fences.

Owing to the breaking of the Tiber sewer, caused by the heavy rains of last season, the District authorities were compelled to enlarge that portion of the sewer which runs through this garden, and in order to get the required area of this sewer they were compelled to raise the arch higher than the surface of the garden, and in consequence of the mound which covers this sewer being so high, the main walk of the garden and those running from it should be raised to suit the new grades thus rendered necessary. It has been thought best to defer this work until the beginning of next season.

COURT-HOUSE IN THE CITY OF WASHINGTON.

Considerable repairs have been made to the roof of the building. The furnaces have been put in condition to serve during the coming winter, the main corridors cleaned and whitened, and the building kept in good repair.

I again urge the necessity of taking out the present hot-air furnaces and substituting steam-heating in their stead.

I also feel called on to notice the insecure condition of the land records of the District of Columbia, now filed in the upper story of this building.

The joists, ceilings, stairs, and roof of this portion of the building are of wooden construction, so that in case of fire there would be great difficulty in securing these land records, which are invaluable to the citizens of the District. In this connection, I will say that the basement-story of this building, all of which is above ground, is of fire-proof construction, a portion of which is not now occupied for public purposes,

and may at a small cost be fitted up as a secure repository for those records.

Very respectfully submitted.

Hon. C. SCHURZ,
Secretary of the Interior.

EDWARD CLARK,
Architect United States Capitol.

REPORT OF THE BOARD OF VISITORS OF THE GOVERNMENT HOSPITAL FOR THE INSANE.

GOVERNMENT HOSPITAL FOR THE INSANE,
Near Washington, D. C., October 1, 1879.

SIR: The Board of Visitors have the honor respectfully to submit this their twenty-fourth annual report.

The usual statistical information respecting the inmates of the hospital during the year 1878 and 1879 will be found in the following tables:

Summary.

	Males.	Females.	Total.
Remaining June 30, 1878	600	193	793
Admitted during the year ending June 30, 1879	169	53	222
Whole number under treatment	769	246	1,015
Discharged—Recovered	68	24	92
Improved	30	7	37
Unimproved	3	1	4
Died	51	12	63
Total discharged and died	152	44	196
Remaining June 30, 1879	617	202	819

Admissions and discharges.

	Males.		Females.		Totals.
REMAINING JUNE 30, 1878.					
Army	401	407	4	4	411
Colored ..	6		0		
Navy	41	41		189	41
Colored ..	0				
Civil life	115	152	140	189	341
Colored ..	37		49		
ADMITTED DURING THE YEAR 1878-79.					
Army	77	80		53	60
Colored ..	3				
Navy	10	10		37	10
Colored ..	0				
Civil life	57	79	37	53	132
Colored ..	22		16		
		169		53	222

Admissions and discharges—Continued.

		Males.			Females.			Totals.	
Navy	{ White.....	40							
	{ Colored ..	0							
			40					40	
Civil life.....	{ White.....	124			145				
	{ Colored ..	40	164		53	198		362	
				617			202		819

NOTE.—There were nine less persons than cases under treatment in the course of the year, by reason of seven re-admissions and two transfers, one from private to indigent list, by order of the Commissioners of the District of Columbia, and one from indigent to Army list, by order of the Hon. Secretary of War.

Physical condition of those who died.

Exhaustion of chronic mania	4
Exhaustion of acute mania	4
Paresis	12
Pneumonitis	2
Phthisis pulmonalis	15
Chronic hepatitis	1
Epilepsy	2
Apoplexy	7
Cephalæmia	2
Chronic diarrhoea	2
Pernicious fever	1
Fatty degeneration of heart	1
Inanition	3
Pyæmia	1
Scirrhus of larynx	1
Pulmonary gangrene	1
Cystitis	1
Hydrothorax	1
Bright's disease	1
Pleuritis	1
Total	63

Physical condition of those who died during the year ending June 30, 1878.

Organic disease of brain	5
Phthisis pulmonalis	10
Apoplexy	6
Epilepsy	1
Paresis	9
Asphyxia	2
Tumor of brain	1
Ramollissement du cerveau	3
Asthenia	6
Remittent fever	1
Pernicious fever	1
Acute peritonitis	1
Total	46

NOTE.—Through inadvertence the above table was omitted in last year's annual report, and is now inserted to complete the statistical records of the hospital.

Duration of the mental disease of those who died.

Less than three months.....	
Three to six months.....	
One year.....	
Two years.....	
Three years.....	
Four years.....	
Five years.....	
Ten years.....	
Twelve years.....	
Eighteen years.....	
Twenty-four years.....	
Total	

Duration of disease on admission.

	Males.	Females.
--	--------	----------

LESS THAN SIX MONTHS.

Army	{ White .
	{ Colored
Navy.....	{ White .
	{ Colored
Civil life.....	{ White .
	{ Colored

LESS THAN ONE YEAR.

Army	{ White .
	{ Colored
Navy.....	{ White .
	{ Colored
Civil life.....	{ White .
	{ Colored

ONE TO TWO YEARS.

Army	{ White .
	{ Colored
Navy.....	White .
Civil life.....	{ White .
	{ Colored

OVER TWO YEARS.

Army	White .
Navy.....	White .
Civil life.....	{ White .
	{ Colored

Duration of disease on admission—Continued.

		Males.		Females.		Totals.	
OVER THREE YEARS.							
Army	White		1				1
Civil life.....	White	1		1			
	Colored..	1		0			
			2		1		3
				3		1	
OVER FOUR YEARS.							
Army	White		1				1
Civil life.....	White	2		1			
	Colored..	0		1			
			2		2		4
				3		2	
FIVE TO TEN YEARS.							
Army	White		1				1
Civil life.....	White	1		3			
	Colored..	2		0			
			3		3		6
				4		3	
TEN TO TWENTY YEARS.							
Army	White		4				4
Civil life	White	3		0			
	Colored..	2		1			
			5		1		6
				9		1	
OVER TWENTY YEARS.							
Army	White		1				1
Civil life.....	White		2				2
				3			

Table showing the nativity, as far as could be ascertained, of the 4,715 cases treated.

NATIVE-BORN.		FOREIGN-BORN.	
District of Columbia	495	Ireland	987
New York	358	Germany	671
Maryland	325	England	112
Virginia	318	France	49
Pennsylvania	255	Canada	38
Ohio	132	Scotland	34
Massachusetts	104	Switzerland	15
Maine	50	Italy	20
Illinois	44	Denmark	12
Connecticut	39	Norway	10
New Hampshire	39	Sweden	10
Indiana	37	Poland	11
Kentucky	32	Russia	6
Michigan	30	Austria	5
New Jersey	33	Nova Scotia	6
Tennessee	24	Spain	4
Wisconsin	19	Holland	6
Vermont	22	Wales	3
Missouri	15	Portugal	3
Rhode Island	13	Hungary	4
Delaware	13	Mexico	3

Table showing the nativity, &c.—Continued.

NATIVE-BORN.		FOREIGN-BORN.	
North Carolina	17	Saxony	4
Alabama	7	Malta	3
South Carolina	7	Belgium	2
Iowa	4	Buenos Ayres	1
Georgia	8	Costa Rica	1
Mississippi	9	Bavaria	2
Louisiana	4	Sicily	1
West Virginia	5	British Columbia	1
Kansas	2	East Indies (British)	1
Florida	2	West Indies (British)	4
Texas	4	West Indies (Hayti)	1
California	2	New Brunswick	1
Choctaw Nation	2	Cuba	2
Colorado	1	China	1
Arkansas	1	Coast of Africa	1
Total	2,475	Total	2,035
Native-born			2,475
Foreign-born			2,035
Unknown			205
Total			4,715

Form of disease of those admitted.

	Total during the year.	Total from the beginning.
Mania, acute	44	1,767
Mania, chronic	52	721
Melancholia	71	531
Dementia	27	1,215
Dementia, senile	7	50
Paresis	9	43
Dipsomania	7	336
Typhomania (Bell's disease)		2
Kleptomania		3
Nymphomania		3
Imbecility	3	31
Opium eaters	2	10
Not insane		3
Total	222	4,715

Complications of those admitted.

	Total during the year.	Total from the beginning.
Epilepsy	25	254
Paralysis	6	107
Suicidal disposition	6	123
Homicidal disposition	5	45
Periodicity	22	184
Puerperal state	1	37
Catalepsy		7
Nostalgia	4	29
Post febrile condition	2	41

As far as could be ascertained, the volunteers of the Army and Navy under treatment during the year ending June 30, 1879, entered the service from the following States:

	Army.	Navy.	Total.
New York	57		57
Ohio	32		32
Pennsylvania	24		24
Indiana	24		24
Michigan	13		13
Illinois	20		20
Wisconsin	11		11
Missouri	8		8
Connecticut	7		7
New Hampshire	4		4
Vermont	1		1
Maryland	6		6
Massachusetts	10		10
New Jersey	5		5
Maine	4		4
Tennessee	1		1
Nebraska	1		1
Kansas	1		1
Delaware	1		1
Minnesota	2		2
Iowa	3		3
North Carolina	1		1
California	1		1
New Mexico	1		1
Kentucky	2		2
Louisiana	1		1
West Virginia	2		2
Unknown	8	1	9
Total	251	1	252

Tabular statement of the time of life at which the 4,715 cases treated since the opening of the institution became insane.

Under 10 years	73
Between 10 and 15 years	51
do 15 and 20 years	304
do 20 and 25 years	896
do 25 and 30 years	985
do 30 and 35 years	835
do 35 and 40 years	517
do 40 and 45 years	349
do 45 and 50 years	232
do 50 and 60 years	224
do 60 and 70 years	118
do 70 and 80 years	42
do 80 and 90 years	4
Unknown	83
Not insane	2
Total	4,715

Private patients.

			Total.
There were at the beginning of the year..	5 males, 7 females		12
Received during the year	7 do. 7 do.		14
Whole number under treatment	12 14 do.		26
Discharged during the year	6 do. 5 do.		11
Remaining at the end of the year	6 do. 9 do.		15

The number of admissions during the year, 222, is 40 in excess of the number last year, and had not especial pains been taken to send to their friends a number of patients whose condition was so far improved as to render such transfer safe and proper, the population of the house must have been largely increased; as it is, the number at the close of the year was 26 greater than at the close of any previous year.

Of the 196 cases discharged 92 are reported as having recovered their reason, in 37 the condition was improved, while there were only 4 cases in which no improvement was apparent.

The number of deaths during the year was 63, or 7.72 per cent. of the average number under treatment. This is a favorable showing and somewhat below the average of previous years.

The number of recoveries, 92, though amounting to more than 41 per cent. of the admissions, is only a little in excess of 9 per cent. of the whole number under treatment. This is not a matter of wonder when we consider the vast preponderance of chronic cases, the great numbers of men broken down in the country's service who drift through other institutions to at last make their home here.

The crowded condition of the house throughout the entire year has rendered it impossible to receive pay patients other than the transient insane of the District and such persons as are by law entitled to treatment here.

Some changes of considerable magnitude have been made during the past year in the hospital buildings that deserve brief notice here. The much-needed appropriation for bakery and laundry was promptly expended as soon as available, and the results promise to be most satisfactory. The old laundry has been greatly enlarged and almost wholly remodeled. The best modern apparatus for labor-saving and perfection of work in this department has been introduced and is now in successful operation. By the addition of a second story good accommodations have been provided for the women employed in this work, together with ample room for storing material for laundry use. The building is now large enough and quite satisfactory in its arrangements. When it is considered that on an average more than twelve thousand pieces pass through the wash every week, it will be conceded that no little of the comfort of the hospital depends upon a well-ordered, well-appointed laundry.

The bakery is an entirely new brick building of two stories and a basement. The upper story is being fitted with lodging rooms for the male help employed at the hospital besides the attendants on patients, including the baker and his assistant, who have a distinct suite of apartments. The principal story of the building is devoted to the preparation and baking of the bread, with store-rooms for flour and all materials required in baking. Here, by the aid of the most approved appliances, about 35 barrels of flour are every week converted into bread for the household. The capacity of the oven (a Valè's Rotary) is such that twice that quantity could be baked in the time without crowding it.

The bake-room itself is of ample proportions, and it is believed is not exceeded by any in this region.

The basement of this building is arranged for store-rooms for the different departments, including a fire-proof room for paints and oils, and a smoking-room also fire-proof.

A new boiler-house has been built and is being furnished with two of Ashcroft's compound tubular boilers, which will be used in heating the new buildings. A new mattress-shop for the employment of patients is also in process of completion.

The last Congress appropriated \$5,000 for a building for the temporary

accommodation of 50 patients. It was evident that nothing but the veriest wooden barrack could be built for that sum to accommodate such a number—a building that from its very nature would be worthless for any other purpose when its temporary occupation as a barrack was over. In order, therefore, that the building might still be of use after it should be no longer needed as a lodging for patients, it was decided to increase the sum available for this purpose by \$2,500 from the amount appropriated for general repairs and improvements and to erect a plain but substantial brick building that could be converted into work-rooms for the inmates in the future and serve as a temporary building for hospital purposes now. This structure, though in one sense a mere shell, is built of brick with hollow 18-inch outer walls, and in many respects answers an admirable purpose. In January last it was occupied by about 50 men, carefully selected from among those patients who had been employed in the various departments of work about the hospital. A liberal diet suited to active laboring persons was furnished for their table, and, since these patients were trusted every day about their work, it did not seem necessary to bolt and bar their rooms at night. Accordingly all window guards were omitted and the key turned in the outer door only at evening, like any other well ordered house. The result has justified our expectations, the door being wide open, there is no need to jump out of the window; there being every facility to run away, nobody wants to go; they are content with and rather proud of their new home. If for any cause it becomes necessary to send them back to the main hospital building they generally request to be returned to the barrack again. Of course this arrangement will not apply to all classes of patients, but the experiment will bear extension. Congress thought so, making \$30,000 immediately available for the present relief of our overcrowded wards. That relief is coming as fast as the buildings can be pushed to their completion, and we hope that when occupied they will help to demonstrate some things in relation to the care and cure of the insane that have, in this country at least, been either but imperfectly apprehended or wholly overlooked.

The appropriations of \$1,500 and of \$3,000 for means of protection against fire have been, or are at the present time, in process of being expended. The subject of proper provision against fire is regarded as one of such importance that no apology is needed for introducing here a somewhat detailed description of the arrangements already existing and now being introduced to provide for the safety of the hospital, crowded with its thousand inhabitants.

In the original construction of those parts of the building occupied by the insane every precaution was taken to guard against the ordinary dangers from fire. The partition walls of the rooms are built of brick without furring, the plaster being laid directly on the brick, thus presenting an effective barrier to the passage of fire from one room to another. The entire roof is covered with tin; the floors are counter-ceiled or deadened with mortar, and the stairs in many of the wings are built with iron to insure safe fire-escapes in case of danger. Matches, so far as they are used, are the safety-match, that light only on the box, and in the wards self-lighting burners are placed in the attendants' rooms, and the gas-jets in the wards are lighted with wax-tapers from these. Tanks of about fourteen thousand gallons' capacity are placed in the attics, connected with pumps both at the boiler-house and the river that are equal to supplying the ordinary demands for water for the building and its inmates. A six inch iron main connects the pumps at the river with the reservoir at the boiler-house, or will deliver the water at the

tanks in the attics if required, the latter being a direct elevation of more than two hundred feet. Hydrants connected with the pumps on the hill are placed at convenient distances outside of the buildings to command any section in case of fire, the connections being two and one-half inch diameter and fitted to receive the hose of the fire department of the District. There is also a small hand fire-engine and about four hundred feet of two and one-half inch standard leather hose. This equipment, comparatively complete and in fair working order, was already provided when the appropriations, amounting to four thousand five hundred dollars, were made to perfect the provision. It is not too much, in a matter of such grave importance, to place safety beyond a peradventure. At convenient points through the building pipes three inches in diameter are being carried up to the attics and connected to the hydrant system of pipes, having attachments for hose on every floor, and suitable hose one and a half inches in diameter placed in proximity to each attachment. These are all so capped that they will take the smaller hose, or, if necessary, this can be removed and the ordinary two and one-half inch standard hose attached with hardly a moment's delay. These pipes always carry the ordinary pressure of the service tanks, and by the closure of a single valve in the main pipe the pressure of the pumps can be substituted. Five hundred feet of Boyd's standard 2½-inch leather hose and one thousand two hundred and fifty feet of 1½-inch best rubber-lined hose has been purchased for these hydrants. Two Bangor extension-ladders, with a full set of single ladders, have been added; also, galvanized-iron water-buckets hung at the foot of every staircase, and a hydro-pneumatic fire-extinguisher placed in the central office. In our protection the weakest link of the chain proved to be that none of the pumps were especially designed for fire-pumps, and they were not equal to the strain of throwing a full stream to the highest point of the building. To meet this difficulty a Knowles fire-pump has been provided, with a steam-cylinder of sixteen inches diameter, a water-cylinder of ten inches, and sixteen-inch stroke, guaranteed to throw four full streams at the same time to the top of the tower of the hospital. To guard against the possibility of being left without water on the hill, a second reservoir will be built in the rear of the hospital building, having a capacity of forty thousand gallons, so arranged as to be at all times available to the fire-engines of the fire department. A new 6-inch main will connect this, as well as the hydrant system, directly with a pump at the river having an ordinary delivery of two hundred and sixty-four gallons per minute and capable of being run with entire safety at more than twice that velocity. With these pumps and hydrants properly connected and a trained fire brigade, there will be few public buildings in the District better protected from fire than these. Certainly there are none where a perfect provision of this kind is a more vital necessity.

The farm and garden have continued to be a source of health as well as profit to the institution.

Even at the very low prices of farm and garden produce that have ruled throughout the year, the farm has more than paid expenses. Great pains has been taken to increase the herd of milch cows which is now one of the finest in this section. The average daily product of milk has been a little over eighty-six gallons, and this Alderney milk is in no sense a watery product; we hope to yet increase the daily yield to one hundred and fifty gallons. Considerable attention has been paid to barn-yard fowls. The soil on the out-farm seems well suited to their culture, and quite extensive hen-houses have been erected and stocked with the most approved breeds of poultry. These, in conjunction with

the swine already established there will, we trust, make ham and eggs as much a St. Elizabeth specialty as our Alderney milk and outdoor grapes now are. Nor is the material gain all; we find with many of our inmates a growing interest in all these things; they become the quickening of a new life, a diversion and a solace from the sadder world within. Whatever takes the insane man from the contemplation of himself aids in his cure, and in this direction the value of farm and grounds is not to be estimated in money.

The current expenditures and receipts of the hospital for the year are as follows:

EXPENDITURES.

Expended for flour, crackers, &c.....	\$9,094	6
butter, cheese, and eggs	7,035	3
meats besides those raised at hospital	21,241	5
poultry, fish, and marketing.....	3,492	4
groceries and ice	18,229	5
potatoes and other vegetables.....	2,935	2
supplies to farm and stock	3,508	8
feed for cows and other stock	4,996	3
repairs and improvements on buildings, cooking, heating, and lighting apparatus, water supply, farm and garden lands, and roads, &c	14,209	0
repairs to vehicles, harness, horseshoeing, &c	1,081	1
furniture, bedding, crockery, &c.....	8,707	1
boots, shoes, and findings.....	2,088	5
dry goods and crockery.....	9,470	0
tools, stationery, printing, and postage.....	1,294	2
fuel and light.....	8,033	7
amount refunded to pay patients	742	0
eloped patients	192	7
medical and surgical supplies	1,732	7
amusement of patients	171	4
miscellaneous supplies.....	24	0
house rent	100	0
salaries and wages	58,119	9
returning recovered patients to their homes	310	4
	<u>176,809</u>	<u>4</u>

RECEIPTS.

From Treasurer of the United States.....	150,000	0
From the District of Columbia and other sources for patients' board	26,809	4
	<u>176,809</u>	<u>4</u>

The products of the farm and garden, with their estimated values, are given below:

Apples, 87 bushels, at 50 cents	\$43	5
Asparagus, 1,915 bunches, at 6 cents.....	114	9
Beans (Lima), 267 bushels, at \$1.50	400	5
Beans (string), 193 bushels, at \$1	195	0
Beans (white), 16 bushels, at \$1	16	0
Beef (fresh), 9,625 pounds, at 7 cents.....	673	7
Beets, 1,168 bunches, at 3 cents	35	0
Beets, 776 bushels, at 50 cents	388	0
Beets (greens), 78 bushels, at 75 cents	58	5
Blackberries, 45 quarts, at 10 cents	4	5
Cabbage, 16,393 heads, at 5 cents	819	5
Cabbage-sprouts, 21 bushels, at 35 cents.....	7	2
Cantaloupes, 3,200, at 3 cents.....	96	0
Carrots, 741 bunches, at 2 cents	14	5
Carrots, 27 bushels, at 50 cents	13	5
Celery, 14,336 heads, at 4 cents	573	4
Cherries, 71 bushels, at \$2	142	0
Chickens, 16½ dozen, at \$4.....	66	0
Corn (green), 2,729 dozen ears, at 10 cents.....	272	5

Cucumbers, 3,122, at 1 cent.....	\$31 28
Cucumbers (pickle), 31,922, at $\frac{1}{2}$ cent.....	159 61
Currants, 88 quarts, at 12 cents.....	10 56
Eggs, 1,050 dozen, at 16 cents.....	168 00
Egg-plant, 732, at 3 cents.....	21 96
Ducks, 7 dozen, at 5.....	35 00
Figs, 193 quarts, at 20 cents.....	38 60
Geese, 25, at 75 cents.....	18 75
Grapes, 9,437 pounds, at 5 cents.....	471 85
Horseradish, $3\frac{1}{2}$ bushels, at \$2.....	7 00
Kale, 1,105 bushels, at 30 cents.....	331 50
Lettuce, 4,721 heads, at 1 cent.....	47 21
Milk, 31,461 gallons, at 23 cents.....	8,609 08
Oyster-plant, 2,744, at 1 cent.....	27 44
Okra, 603 quarts, at 4 cents.....	24 12
Onions, 330 bushels, at \$1.....	330 00
Onions, 7,800 bunches, at 3 cents.....	234 00
Parsley, 3,266 bunches, at 1 cent.....	32 66
Parsnips, 107 bushels, at 75 cents.....	80 25
Pigeons, 133, at 25 cents.....	33 25
Peppers, 2,543, at 3 cents.....	76 29
Pease, 498 bushels, at 75 cents.....	373 50
Pork, 17,931 pounds, at 5 cents.....	896 55
Potatoes (Irish), 590 bushels, at 80 cents.....	472 00
Potatoes (sweet), 132 bushels, at 40 cents.....	52 80
Pumpkins, 374, at 3 cents.....	11 22
Quinces, $6\frac{1}{2}$ bushels, at \$3.....	19 50
Radishes, 1,607 bunches, at 3 cents.....	48 21
Rhubarb, 35 bunches, at 6 cents.....	2 10
Spinach, 50 bushels, at 50 cents.....	25 00
Sage, 100 bunches, at 5 cents.....	5 00
Squash (summer), 2,848, at 1 cent.....	28 48
Squash (winter), 1,671, at 5 cents.....	83 55
Strawberries, 824 quarts, at 8 cents.....	65 92
Tomatoes, 813 $\frac{1}{2}$ bushels, at 50 cents.....	406 75
Turkeys, 45, at \$1.50.....	67 50
Veal, 917 pounds, at 8 cents.....	73 36
Watermelons, 276, at 6 cents.....	16 56

\$17,571 89

The following products having been consumed on the farm, are not included in the foregoing table:

Grass pasturage.....	\$800 00
Oats in straw, 22 acres, at \$20.....	440 00
Corn fodder, 12 acres, at \$30.....	360 00
Corn, shelled, 100 bushels, at 60 cents.....	60 00
Grass cut green, 5 acres, at \$25.....	125 00
Hay, 204 tons, at \$15.....	3,060 00
Straw, 48 tons, at \$12.....	576 00
Ruta-bagas, 216 bushels, at 40 cents.....	86 40
Mangold-wurzel, 115 tons, at \$10.....	1,150 00

6,657 40

ESTIMATES FOR THE YEAR ENDING JUNE 30, 1881.

1. For the support, clothing, and treatment in the Government Hospital for the Insane, of the insane of the Army and Navy, Marine Corps, and revenue-cutter service, and of all persons who have become insane since their entry into the military or naval service of the United States, and who are indigent, and of the indigent insane of the District of Columbia, \$175,000.

The number of inmates of the hospital June 30, 1879, was 818, and at the date of this writing (September 20, 1879) is 835. There is a gradual increase of numbers admitted over and above those discharged, although many have been sent to friends with a view to relieve the crowded con-

is now carried on in the basement of the center building at considerable disadvantage and greatly to the discomfort of the general office, situated directly over the kitchen, where the heat at times becomes more than equatorial, and the odor of cooking received is sufficient to supply the whole building.

A suitable mortuary building is still wanting, and the necessity for so indispensable a structure hardly calls for any explanation.

A greenhouse is required to enable us to propagate such bedding plants as are needed for the embellishment of the gardens and grounds, and is in the interest of economy; it should be more than this—it should give us a winter garden for the recreation of the inmates, and fresh roses for their rooms when the lawns are no longer bright.

It is thought that these special improvements may all be provided for the sum of twenty-five thousand dollars, and it is recommended that such part of this as is deemed necessary for the provision of pure water should be made immediately available.

4. For furnishing and fitting the relief building for its occupation by patients, including the heating apparatus and the finishing of rooms in the upper story, \$15,000.

Congress, at the last regular session, appropriated \$30,000, immediately available, for the relief of our overcrowded wards by the erection of barracks or associate accommodations for such of our inmates as might safely be provided for with a somewhat less liberal provision than that afforded by the main hospital edifice. The relief buildings on which the brickwork was commenced the first day of May last, are now, in September, being placed under roof. They consist of a central building of four stories and a basement, 60 feet long by 45 feet wide; to this are connected by short corridors two wings of three stories and a basement, each 75 feet long by 32 feet wide, also a wing of the same height and width running back 32 feet from each building. These buildings are thoroughly built of unpressed brick in a plain but substantial manner, and when finished will furnish good present accommodations for more than two hundred cases of a mild type of insanity. When the sum expended is taken into account, the appearance of the buildings is very creditable. It will be better economy to finish off a portion of the rooms in the most thorough manner, rather than to occupy the whole structure as a barrack with whitewashed walls and rough floors. It is now thought that one wing may be ready for occupation by the 1st of May, 1880, or one year from the date of its commencement. No effort will be spared to have it ready at even an earlier date, if possible, and in order that there may be no delay in this, we ask that the appropriation of \$15,000 for the heating apparatus and furnishing the entire building ready for occupants, together with the finishing of the rooms in the upper story, may be made at once available.

5. For a permanent extension of the accommodations of the hospital by the erection of a separate hospital building for the female patients, \$300,000, one-third of which is asked for expenditure in the fiscal year ending June 30, 1881.

While realizing the great relief that will be temporarily afforded when the new buildings that are now being erected are occupied, a relief that can hardly be overestimated, it is idle to claim that anything more than the present necessity for immediate provision for our great excess of numbers has been met. It is impossible that full justice can be done to these unfortunate wards of the nation, or that "most humane and enlightened care" rendered which the organic act establishing the hospital requires at our hands, so long as no separate building and pleasure

American Journal of Insanity, neatly bound, for our library, together with odd numbers of different hospital reports needed to complete our files. Our thanks are also due to the superintendents of hospitals and others who have aided us in our endeavor to obtain full sets of the reports of the American hospitals for the insane. It seems quite important that as complete a collection as can be made of this class of publications should be established here, both as a matter of reference and in order that a full history of this specialty in America may be preserved at the national capital. To any one having old files or odd numbers of such reports that they are willing to contribute we will gladly send a list of those reports that are still missing from our shelves and defray the expense of forwarding anything that they may be able to send us.

We are indebted, through Mr. John A. Baker, of Washington, to the Ames Plow Company for a side-hill plow of approved pattern and finish.

The ladies of the board have also continued to favor our wards with their floral offerings, which have been quite acceptable. In this connection it seems proper to acknowledge the receipt, by order of the Honorable Secretary of War, from the dismantling of the old building of the War Department, of the door of the private office of the Secretary, and one marble mantel, as relics to be placed in the new relief building now in process of erection. They will certainly be prized and guarded by our "boys in blue"; and years hence these traces of that old building, identified with so much that has become history, will remind another generation of our heroic age and "the giants on the earth in those days."

There has been no change in the medical staff during the year. The officers of the hospital have continued to discharge their varied duties with diligence and that increasing measure of success which the added experience of years and devotion to their work insure.

Rev. S. F. Ryan, who has conducted the Sunday service in the place of Rev. J. O. Sullivan during the past year, has been appointed chaplain. Rev. John Lanahan, D. D., fills very acceptably the place made vacant in our list of chaplains by the resignation of the Rev. Dr. Newman.

In the hospital year just closed there has been, in a still over-crowded house, immunity from excessive mortality or epidemic disease, for which we may well be devoutly thankful. Hampered as we have been, still some good work has been done, and while we have had no suicide or violent death, some have gone forth restored. This hospital, it is the nation's charity; in the completeness of its appointments, in the generosity and breadth of its purpose, in the humanity of its care, let it be worthy of her, and being such may its support be liberal, as befits the alms-giving of a great nation.

We are, very respectfully, your obedient servants,

JOS. K. BARNES,
President of the Board.
W. W. GODDING,
Secretary ex officio.

Hon. CARL SCHURZ,
Secretary of the Interior.

REPORT OF THE COLUMBIA INSTITUTION FOR THE DEAF AND DUMB.

COLUMBIA INSTITUTION FOR THE DEAF AND DUMB,
KENDALL GREEN, NEAR WASHINGTON, D. C.,
October 28, 1879.

SIR: In compliance with the acts of Congress making provision for the support of this institution, we have the honor to report its progress during the year ending June 30, 1879.

NUMBER OF PUPILS.

The pupils remaining in the institution on the 1st of July, 1878, numbered	70
Admitted during the year	26
Since admitted.....	22
Total	118

Under instruction since July 1, 1878: males, 111; females, 7. Of these, 76 have been in the collegiate department, representing 24 States and the Federal District, and 42 in the primary department. A list of the names of the pupils connected with the institution since July 1, 1878, will be found appended to this report.

HEALTH OF THE INSTITUTION.

We are happy to be able to record the fact that no death has occurred in the institution during the year. We have had no serious cases of sickness and no epidemic diseases have made their appearance.

COURSES OF INSTRUCTION.

No essential changes have been made in the ordinary courses of instruction pursued in the several departments of the institution; these remain as described in former reports. Examinations conducted at stated periods have given us evidence of the gratifying fact that the average standard of scholarship throughout the institution reached a higher point during the year now under review than ever before.

INSTRUCTION IN ARTICULATION.

As was stated in our last annual report, Miss Gordon, who had been for many years an instructor in our primary department, was detailed to the work of teaching articulation. She has devoted her entire time to this branch of instruction, and the results of her labors have been entirely satisfactory. Eight pupils have been under her training, four of whom were born deaf; one became deaf at the age of 18 months; another at the age of 3 years; another at the age of 4½ years. None of these seven pupils possessed any power of speech when they began receiving lessons in articulation. The other member of the class, now 15 years of age, lost his hearing at the age of 11. This pupil possessed the power of speech in an almost perfect degree. The instruction in his case, therefore, was directed to the correction of certain mistakes in pronunciation, to the improvement of the general management of his voice, and to the acquisition of the power of reading from the lips. In all the other cases it was of course necessary to begin with the elements of vocal utterance. Bell's system of visible speech, with the methods recommended therein, has been closely followed.

The progress made by the pupils under Miss Gordon's instruction has

been satisfactory in all cases. No pupil has been dropped on account of inability to improve, and the number receiving instruction in articulation is this year increased to 12.

In our tenth Annual Report were presented the conclusions of the President of the institution, formed after a careful examination of between forty and fifty institutions in Europe. Among these conclusions the opinion was expressed that not more than thirty per cent. of the whole number of deaf-mutes could be expected to attain sufficient proficiency in speech to justify the time and expense necessarily involved in their instruction. Since the report above referred to was published in 1867, quite a number of schools organized especially for giving instruction in articulation have been maintained in this country, and in many of the older institutions classes in articulation have been successfully carried forward. No results, however, have been attained which modify the conclusions of twelve years ago with regard to the percentage of deaf-mutes that may be expected to succeed in articulation. In this institution we shall therefore make only such efforts as are consistent with the conclusions above referred to, and for the present we shall confine this branch of instruction to the primary department.

LECTURES.

For several years courses of lectures on subjects of general interest to the college have been given by the members of its faculty, which have proved entertaining and instructive. Similar lectures have also been delivered to the pupils in the primary department during the past year by the instructors in that department. The importance to our students and pupils of such lectures will be appreciated, when it is remembered that they are necessarily cut off by reason of their deafness from the enjoyment of lectures given to the general public.

The lectures given by the Faculty of the College were as follows:

Beauty: Its Influence on Moral and Intellectual Development; by the President.

The Indo-European Family of Languages; Professor Porter.

Dante; Professor Fay.

Travels in the East, with illustrations given by the aid of the Magic Lantern; Professor Chickering.

Oxygen and certain Oxygen Compounds; Professor Gordon.

The Inspiration of Columbus; Assistant Professor Hotchkiss.

The Manners, Customs, and Daily Life of the Ancient Romans; Assistant Professor Draper.

In the primary department the lectures were as follows:

The Constitution and Government of the United States; Mr. Denison.

The Geographical Zones; Mr. Ballard.

Physiology; Mr. Sparrow.

EXERCISES OF PRESENTATION DAY.

The exercises of the regular public anniversary of our collegiate department took place on the 7th day of May, in the chapel of the institution. The President of the United States, in his capacity as patron of the institution, occupied the chair. The exercises were opened with prayer by the Rev. John G. Ames, president of the Young Men's Christian Association of the city of Washington.

The candidates for degrees delivered essays as follows:

Dissertation: Dr. Samuel Johnson; Jerome Thaddeus Elwell, Pennsylvania.

Dissertation: The Educational Value of the Natural Sciences; John Albert Prince, Massachusetts.

Oration : Our Railroads ; James Joseph Murphy, Wisconsin.

Messrs. Ellwell and Murphy were then presented by the President of the College to the Board of Directors as candidates for the degree of Bachelor of Arts. Mr. Prince was presented as a candidate for the degree of Bachelor of Philosophy.

President Gallaudet then introduced President Porter, of Yale College, who delivered an address, which was given in signs to the deaf portion of the audience by his brother, Professor Porter, of our College Faculty.

Rev. J. J. Bullock, D. D., chaplain of the Senate, then dismissed the audience with the benediction.

At the close of the scholastic year, on the 18th of June, degrees were conferred in accordance with the recommendations of Presentation Day.

From the primary department, Lydia Leitner, of Maryland, and Edgar Graugnard, of Louisiana, were graduated with suitable diplomas.

William A. Tilley, of the District of Columbia; William Brookmire, of Pennsylvania; John A. Starkes, of Virginia, and Edward O. Herr, of Kentucky, were promoted to the collegiate department at the opening of the present term.

All of which is respectfully submitted by order of the Board of Directors.

EDWARD M. GALLAUDET,
President.

Hon. C. SCHURZ,
Secretary of the Interior.

REPORT OF THE FREEDMEN'S HOSPITAL AND ASYLUM.

FREEDMEN'S HOSPITAL,
Washington, D. C., October 1, 1879.

SIR: I have the honor to present the annual report of the Freedmen's Hospital and Asylum for the fiscal year ending June 30, 1879, as follows:

The whole number of patients in hospital during the year was 904,
viz:

Remaining in hospital June 30, 1878.....	231
Admitted to hospital during the year, viz: Males, white.....	154
Females, white.....	31
Born in hospital, viz: Males, white	2
Females, white	3
Whole number of white.....	190
Admitted to hospital during the year, viz: Males, colored.....	222
Females, colored	187
Born in hospital, viz: Males, colored.....	25
Females, colored	18
Whole number of colored.....	452
Transient	31
Total number admitted, supported, and treated in hospital.....	904

Of the above patients there were discharged cured	422
Discharged relieved	90
Discharged, transient	31
Died	140
Still-born	4
<hr/>	
687	

Remaining in hospital June 30, 1879 217

The Colored Orphans' Home and Asylum, containing about 115 children and attendants, has been furnished with medicines during the year. This institution was formerly a part of the hospital.

Besides the above, a large dispensary has been supported for the benefit of the numerous poor who are constantly applying to this hospital for aid. Of these the names of 2,270 have been entered in the book for out-patients, and about four thousand prescriptions have been made and put up for them.

The nativity of the patients admitted to hospital was as follows :

Virginia	221	Scotland	2
Maryland	122	Vermont	2
District of Columbia	100	Wales	2
Ireland	39	West Virginia	2
Germany	23	Alabama	1
New York	23	Austria	1
Pennsylvania	23	Canada	1
South Carolina	8	Cuba	1
North Carolina	7	Denmark	1
England	7	France	1
Massachusetts	6	Hungary	1
Connecticut	4	Iowa	1
Maine	4	Italy	1
Missouri	4	Kentucky	1
New Jersey	4	Louisiana	1
Ohio	4	New Brunswick	1
Switzerland	3	Rhode Island	1
Delaware	2	Sweden	1
Florida	2	Tennessee	1
Georgia	2	At sea	1
Illinois	2	Unknown	8

The diseases and conditions for which the patients were admitted to hospital and treated in dispensary were as follows :

Disease, &c.	Hospital.	Dispensary.	Disease, &c.	Hospital.	Dispensary.
Fracture of skull	2	.....	Sciatica .....	.....	2
Fracture of forearm	1	.....	Conjunctivitis	4	25
Fracture of thigh	1	.....	Ophthalmia	4	1
Fracture of ankle	1	.....	Keratitis	1	.....
Compound comminuted fracture of leg	2	.....	Amaurosis	1	.....
Dislocation of hip	1	.....	Blindness .....	.....	14
Dislocation of wrist	1	.....	Otitis .....	.....	8
Gunshot wounds	7	1	Iritis	1	.....
Incised wounds	4	4	Tinea capitis .....	.....	8
Lacerated wounds	1	.....	Herpes .....	.....	6
Punctured wounds	1	.....	Eczema	1	2
Contused wounds .....	.....	5	Ecthyma .....	.....	3
Contusions	5	28	Lichen	1	2
Sprains .....	.....	7	Frost-bite	4	5
Inflammation of knee-joint	2	.....	Burns	5	7
Inflammation of elbow-joint	1	.....	Morbus coxarius .....	.....	1
Convulsions	4	10	Caries	6	4
Chorea .....	.....	1	Aneurism of the aorta	1	.....
			Abscess	4	2

Disease, &c.	Hospital.	Dispen- sary.	Disease, &c.	Hospital.	Dispen- sary.
Lumbar abscess.....	5	1	Hydrothorax.....	2	—
Chronic ulcer.....	11	61	Hæmorrhoids.....	3	8
Anthrax.....	3	—	Fistula in ano.....	3	1
Poison.....	—	1	Prolapsus ani.....	—	1
Whitlow.....	—	1	Inflammation of rectum.....	1	—
Scrofula.....	3	50	Ulceration of rectum.....	1	—
Leprosy.....	1	—	Peritonitis.....	3	1
Cancer.....	7	—	Hernia, inguinal.....	5	2
Marasmus.....	1	—	Hernia, scrotal.....	4	—
Anæmia.....	1	—	Hernia, femoral.....	1	—
Gangrene.....	2	—	Varicocele.....	1	—
Goitre.....	—	2	General dropsy.....	4	—
Onychia.....	1	—	Cardiac dropsy.....	3	—
Syphilis.....	19	49	Renal dropsy.....	4	—
Syphilis, secondary.....	11	20	Albuminuria.....	11	4
Syphilis, tertiary.....	2	—	Uremic poisoning.....	1	—
Bubo.....	1	2	Hydrocele.....	2	—
Acne.....	1	—	Pregnancy.....	51	31
Urticaria.....	—	2	Puerperal condition.....	3	—
Elephantiasis.....	1	—	Metritis.....	2	—
Typhoid fever.....	8	—	Endometritis.....	1	3
Remittent fever.....	8	2	Fibrous tumor.....	2	2
Intermittent fever.....	32	238	Prolapsus uteri.....	2	1
Congestive chill.....	1	—	Hypertrophy of uterus.....	—	3
Erysipelas.....	2	4	Ruptured perineum.....	1	—
Measles.....	1	1	Phthisis pulmonalis.....	59	84
Scarlet fever.....	1	—	Haemoptysis.....	7	9
Diphtheria.....	—	2	Epistaxis.....	2	2
Varicella.....	1	—	Functional disease of heart.....	3	10
Aphthæ.....	—	11	Valvular disease of heart.....	5	3
Tonsillitis.....	1	90	Hypertrophy of heart.....	1	—
Pharyngitis.....	1	1	Angina pectoris.....	1	—
Dyspepsia.....	5	65	Stroke.....	3	—
Gastritis.....	1	1	Meningitis.....	2	—
Colic.....	2	34	Congestion of brain.....	2	—
Diarrhœa, acute.....	6	76	Softening of brain.....	1	—
Diarrhœa, chronic.....	5	9	Apoplexy.....	2	4
Dysentery.....	2	20	Paralysis.....	9	6
Hepatitis.....	2	—	Epilepsy.....	5	3
Constipation.....	1	170	Insanity.....	5	—
Worms.....	—	12	Locomotor ataxia.....	1	16
Gonorrhœa.....	7	62	Cephalalgia.....	—	30
Gleet.....	—	3	Hysteria.....	2	31
Orchitis.....	2	1	Neuralgia.....	7	2
Stricture of urethra.....	2	—	Mammary abscess.....	1	33
Fistula, urethral.....	2	—	Amenorrhœa.....	1	20
Hæmaturia.....	2	1	Leucorrhœa.....	1	11
Suppression of urine.....	—	1	Dysmenorrhœa.....	—	12
Incontinence of urine.....	—	4	Menorrhagia.....	—	3
Diuresis.....	—	1	Vaginitis.....	1	—
Chronic cystitis.....	1	—	Cancer of uterus.....	1	—
Paraphimosis.....	—	1	Born.....	46	—
Rheumatism.....	46	211	Infancy.....	8	—
Rheumatism, syphilitic.....	3	—	Tongue-tie.....	—	1
Aphonia.....	—	1	Dentition.....	1	4
Asthma.....	2	12	Teeth extracted.....	—	75
Catarrh.....	1	107	Senile debility.....	9	—
Laryngitis.....	1	1	General debility.....	—	95
Croup.....	—	3	Convalescent.....	13	—
Bronchitis, acute.....	15	180	Deformity.....	3	—
Bronchitis, chronic.....	4	29	Curvature of spine.....	—	1
Pneumonia.....	11	3	Malingering.....	1	—
Pleurisy.....	8	34			
Pleurodynia.....	2	12	Total.....	642	2,270

The following table shows the number of cases of each disease which resulted fatally :

Disease.	White.	Colored.	Total.	Disease.	White.	Colored.	Total.
Phthisis pulmonalis....	4	36	40	Caries of knee-joint, ankle, and sternum.....		1	1
Carbuncle on neck and head.....	1		1	Chronic cystitis.....		1	1
Senile debility.....		17	17	Chronic laryngitis.....	1		1
General dropsy.....		7	7	Compression of brain.....		1	1
Cardiac dropsy.....		4	4	Congestion of brain.....		1	1
Renal dropsy.....		3	3	Congenital debility.....		1	1
Paralysis.....		2	2	Dysentery.....		1	1
General paralysis.....		6	6	Embolism.....		1	1
Apoplexy.....		5	5	Hæmophilia.....		1	1
Tetanus.....		3	3	Hæmoptysis.....		1	1
Softening of brain.....		3	3	Hydrothorax.....	1		1
Albuminuria.....		3	3	Nephritis.....		1	1
Pneumonia.....		2	2	Pelvic abscess.....	1		1
Pleuro-pneumonia.....		2	2	Peritonitis.....		1	1
Typhoid-pneumonia.....		1	1	Psoas abscess.....		1	1
Meningitis.....		2	2	Pyæmia.....		1	1
Fibrous tumors.....		2	2	Senile gangrene of left foot.....		1	1
Chronic diarrhoea.....		2	2	Strangulated hernia.....		1	1
Passive congestion of lungs.....		2	2	Typhoid fever.....		1	1
Gangrene of lungs.....		1	1	Hypertrophy of heart.....		1	1
Cancer of womb.....		1	1	Abscesses of sternum and axillæ.....		1	1
Cancer of vagina and uterus.....		1	1	Anæmia.....		1	1
Cancer of stomach.....		2	2	Angina pectoris.....		1	1
Cancer of left breast and left axilla.....		1	1	Valvular disease of heart.....		1	1
Caries of pelvis.....		1	1	Uremic poison.....		1	1
Caries of pelvis and hip-joint.....		1	1	Total.....	8	132	140

The following table shows the number of married and unmarried women who gave birth to children in hospital during the year :

	White.	Colored.	Total.
Married.....	2	7	9
Unmarried.....	3	36	39
	5	43	48

Besides numerous minor surgical operations, the following more important operations were performed :

Amputation of thigh.....	1	Operation for removing cancer.....	3
Amputation of leg.....	3	Tapping for hydrocele.....	7
Amputation of foot.....	2	Tapping for abdominal dropsy.....	4
Amputation of arm.....	2	Operation for removing caries bone..	5
Operation for strangulated hernia.....	2		

The severity of the cases admitted to hospital may be inferred from the fact that four died on the day of admission, nine died on the next day after admission, and four on the third day. A glance at the table

of diseases which proved fatal will show that most of the deaths resulted from incurable diseases and conditions, such as consumption, senile debility, cardiac and renal dropsy, and paralysis.

The proportion of still-births this year is much less than in any former year, and the evidence of attempts at abortion is also correspondingly less.

It will be observed that in 39 of the 48 cases of confinement the mothers were not married; of these, 24 were first confinements, and 15 were second confinements. There is very little chagrin or mortification on the part of these mothers, and yet they are far from being abandoned and dissolute. There is no law in the District to reach them, nor are the partners of their guilt amenable to law—a circumstance very much to be deplored.

Religious exercises and chaplain services have been performed by theological students, licentiate preachers, who receive their board for their services.

All the articles of clothing and bedding used in the hospital, except shoes, hats, hose, coats, and blankets, are manufactured on the premises at a slight advance from the cost of the raw material.

The appropriation for the support of this hospital for the fiscal year ending June 30, 1879, was \$40,500.

The morning report shows that 81,229 days of support have been afforded to patients during the year. Without the rent, this makes the daily cost of each patient for subsistence, medicines, nursing, and clothing about 45 cents per day.

It is believed that no governmental or eleemosynary institution in the District affords so good care and treatment, for the amount expended, as this hospital.

As evidence that the patients are well cared for here, I cite the fact that most of them, white and colored, when cured leave the hospital with reluctance, and most of those who have once been treated here, when again overtaken by accident or disease, apply a second, third, fourth, and even a fifth time for admission.

The necessity for the continuance of this hospital is manifest from the constantly increasing number of applications for the admission of persons suffering from accidents, from wounds, and from severe diseases. The number of admissions this year exceeds that of any former year by 123.

Not less than 175 have come in here during the year by recommendation of the police. In fact, this is the only general hospital, for the reception of all classes of patients, within the District. Many of the patients are non-residents, and must be provided for somewhere by the general government when they fall sick in this city. The location of the hospital is central and healthy. Not a case of original malarial disease has been known to occur within the premises since they have been occupied for their present purposes, and only one case of typhoid fever.

Very respectfully, your obedient servant,

G. S. PALMER, M. D.,
Surgeon-in-Chief.

HON. CARL SCHURZ,
Secretary of the Interior, Washington.

REPORT OF THE COLUMBIA HOSPITAL FOR WOMEN AND
LYING-IN ASYLUM.COLUMBIA HOSPITAL FOR WOMEN
AND LYING-IN ASYLUM,
Washington, D. C., October 23, 1879.

SIR: The Board of Directors of the Columbia Hospital for Women and Lying-in Asylum beg leave to transmit the thirteenth annual report of that institution for the fiscal year ending June 30, 1879.

As will be seen from the accompanying reports, much has been accomplished during that period. The mortality rate has been exceedingly low, one adult death only being mentioned in the report of the surgeon in charge, and during a period of two consecutive years the lethality is but one-third of one per cent. To maintain such a condition of police, the board feel compelled to again urge the necessity for the erection of isolated cottages, where those suffering from puerperal contagious diseases can be removed, and where other afflicted women can be accommodated whose condition prevents their admission to general hospitals without special facilities for their proper treatment. Many such apply for admission here, but the danger that arises to other patients in the same building prohibits their being received; whereas, if the proper means of isolation could be obtained their lives would be rendered at least bearable, and the comforts of a home afforded them.

The decreased appropriations during the past year have called for the most rigid economy in expenditure; and where retrenchment could be made without deprivation to the patients, the Board of Directors were compelled to enforce it and to curtail all expenses not indispensable for the proper maintenance of the hospital.

Out of the fund derived from pay-patients a laundry has been erected, and other necessary improvements completed which could not be paid for out of the general appropriation. In conclusion, the Board of Directors return their thanks to the officers of the hospital, to the board of consulting physicians and surgeons, and to the lady visitors whose kind interest has been felt during the fiscal year just closed.

CHAS. H. CRAGIN, M. D.,
J. K. BARNES,
Committee on Annual Report.

Hon. CARL SCHURZ,
Secretary of the Interior.

*To the Board of Directors
Columbia Hospital for Women and Lying-in Asylum:*

GENTLEMEN: I have the honor to submit for your consideration the thirteenth annual report of the Columbia Hospital for Women and Lying-in Asylum, and the Columbia Hospital Dispensary, for the fiscal year ending June 30, 1879.

It is with much satisfaction that I again record but a single adult death during the year just closed. That death is attributable to pulmonary congestion following the removal of an ovarian tumor from a patient fifty-four years of age, whose condition was one of extreme debility incident to the disease under which she labored for many years, and her persistent refusal to permit operative interference until life was a burden and suffocation imminent. By the advice of the consulting board of physicians and surgeons, the patient being willing to submit to anything that might afford relief, it was deemed necessary to perform ovariectomy. Death did not occur until the eighth day, though congestion of the lungs had set in, owing to the debilitated condition of the woman prior to the operation, and the consequent failure to obtain the necessary heart force to carry on the circulation.

There were many and firm adhesions of the growth to the surrounding tissues, and

a variety of complications, rendering the operation extremely difficult, and decreasing in proportion the chances of recovery.

Under these circumstances life was unusually prologued, and I have no doubt that, had the operation been undertaken at an earlier period in the history of the disease, the woman's life might have been spared.

It may not be amiss at this time to call attention to the fact that during the fiscal year ending June 30, 1878, 294 patients were treated in the hospital, of whom one died. During the past fiscal year the number reached 299, while again one death is recorded. Thus it will be seen that in the treatment of 593 patients, and considering a period of two years' duration, we have to report the loss of two patients, a mortality rate of about one-third of one per cent.

This percentage seems worthy of comment when it is remembered that during the time specified there have been 223 cases of delivery, many of them attended with complications the most difficult met with in obstetrical practice, and yet not a single maternal death has to be noted in the lying-in department of this hospital for more than two years.

There were 40 surgical operations, embracing most of the lesions which require operative interference in the special branch for the treatment of which this hospital is intended, and in no case did a fatal result occur as the immediate effect of the operation.

The out-door department still continues to afford relief to a large number of poor women who, unable to pay for the services of a physician at their own homes, are compelled to seek assistance where medical aid and attention can be furnished them gratuitously. The accompanying synopsis appended to this report explains the number treated and the results.

The addition of the laundry to the main building has supplied a want long felt, and increased the facilities for the accommodation of patients.

Our provision for heating the building, insufficient before the erection of the Mansard roof, has now become entirely inadequate, and as a consequence much inconvenience and discomfort are experienced during the winter months. I trust that some means may be devised to remedy this defect before the cold weather sets in.

I would also suggest to your honorable body that a tank be placed in the upper portion of the building in order to secure a supply of water in the "white lying-in ward," as it frequently happens that during the greater portion of the day in the summer months no water reaches the upper story.

The sanitary condition of the hospital, owing to the untiring zeal of the matron and nurses, has been all that could be desired, and general satisfaction has been expressed by every patient admitted during the year.

In compliance with chapter xi, section 7, of the by-laws, Mr. Charles Earle has been appointed to fill the vacancy caused by the resignation of Dr. Pool, my late assistant in the hospital and dispensary, to whose strict attention to duty and careful watching much of the success attending my labors in this hospital for the past two years is largely due.

In submitting this my second annual report to the board of directors, I cannot forbear expressing my entire satisfaction in the evidence here given of the progressive and improving condition of the hospital. In the management of its affairs, which the board has seen fit to intrust to me, I have conscientiously striven to gain the best possible results as regards hygiene, treatment of the sick, and economical expenditure, and I feel assured that the hospital is now entering upon a period of success and usefulness which cannot be other than gratifying to those who have watched over its interests for so many years.

I am under many and increasing obligations to the board of advisory physicians and surgeons, and take this occasion to return my most sincere thanks for the valuable advice and assistance which has been at all times so cheerfully given.

I also beg to state that the property under my care, except such as has been used for the benefit of the hospital and dispensary, is in good condition. Little has been added to the stock on hand at the end of the last fiscal year, which was examined and approved by the "Committee on Personal Property," and no purchase has been made during the present fiscal year unless imperatively demanded by the wants of the hospital.

Respectfully, your obedient servant,

P. J. MURPHY.

Resident Physician and Surgeon in Charge.

Patients in hospital July 1, 1878	19
Number admitted during the year.....	280
<hr/>	
Total number treated during the year ending June 30, 1879	299
Discharged during year	272
<hr/>	
Remaining in hospital July 1, 1879	27
Number of prescriptions compounded	1,500

The results were as follows :

Obstetrical cases.

Delivered before June 30, 1878, but still in house at that date.....	3
Delivered during the year ending June 30, 1879.....	126
Left before delivery	30
Remaining in house undelivered July 1, 1879	7
Total	166
Maternal mortality.....	0
Cases of twins	4
Forceps deliveries	7
Adherent placenta	5
Post-partum convulsions	2
Post-partum hemorrhage	3
Still-births.....	7

Of the cases of still-births, 1 was admitted advanced in second stage with prolapsed funis; 1 was premature; 1 was an acephalous monstrosity. In 1 case cause was not determined, and in 3 there was marked fatty degeneration of the placenta.

Report of Columbia Hospital Dispensary for fiscal year ending June 30, 1879.

Number of patients under treatment at date of last report.....	27
Number of patients received during year.....	391
Whole number treated during year.....	418
Number cured	157
Number relieved	94
Number died .....	..
Result unknown	65
Number sent to hospital.....	64
Number of prescriptions compounded during the year.....	842
Number under treatment at date of this report.....	38

	Diseases of females.		Total.
	Hospital.	Dispensary.	
Number of patients under treatment at date of last report	19	27	46
Number of patients received during year.....	280	391	671
Whole number treated during year	299	418	717
Number cured.....	203	157	360
Number relieved	40	94	134
Number died.....	1	.....	1
Result unknown	28	65	93
Number sent to hospital.....	.....	64	64
Number of prescriptions compounded during the year.....	1,500	842	2,342
Number under treatment at date of this report	27	38	65

**REPORT OF GOVERNMENT DIRECTORS OF THE UNION
PACIFIC RAILROAD COMPANY.**

WASHINGTON, D. C., December 4, 1879.

SIR: The government directors of the Union Pacific Railroad Company made their annual inspection, including road-bed, rolling-stock, workshops, rolling-mill, and accounts, in the month of August last. One member of the board was not present, but he made a separate inspection of the road in October.

From the 1st day of July, 1862, when the act of Congress was passed incorporating the Union Pacific Railroad Company, up to the 7th day of May, 1878, when the Pacific Railroad "funding bill" became a law, there

as the "Cambria" rail, made at Johnstown, Pa., now in use after twelve years of wear, is as good as the average new iron rail. There are 100 miles of this rail between Ogden and Cheyenne. Nearly all the rails are laid with square joints and on the cross-ties. This, together with a low rate of speed, makes it one of the easiest-riding roads; a track laid with broken or lap joints is apt to give a rolling and unpleasant motion.

The Union Pacific, like all the other great lines west of the Missouri, is, strictly speaking, a single track road. The low rate of speed of these lines, the infrequency of local trains, and the free use of the telegraph enables a single track to do the work of a double one with nearly equal safety. Members of the board walked over portions of the track, and found in places here and there, east of Cheyenne, on the main line, some "Cambria" iron rails which have been cut and relaid, less than 16 feet in length; no such places were found on the western half of the line.

The rolling-stock is in good condition. Perhaps this is in part because it is rarely permitted to leave the road. Neither freight, passenger cars, nor locomotives come east of Council Bluffs. At that place freight and passengers nearly all change cars. The rule is a good one. Rolling-stock receives better care at home than can be expected at the hands of strangers.

The rolling-stock consists of 179 locomotives, 165 passenger, baggage, and sleeping-cars, and 3,216 freight-cars. The increase of freight business, especially during the latter half of 1879, has made it necessary to have more cars; over 100 new stock-cars have been ordered and are now building, in part, at the shops of the company at Omaha; also 100 new flat cars and 150 box-cars.

The books show that ten new engines, all 10-wheelers of uniform pattern, made at Taunton, Mass., have been put on the road since January 1. The economy of uniform engines, whose pieces are interchangeable, is evident; the parts can be kept in store and ready for use. Thirty more new engines of the best kind have been contracted for at the low prices of last year and will soon be running. If bought at present prices these would cost probably \$70,000 more. Seventy-two engines have spark-arresters. These are a marked addition to the comfort of travelers.

One new car, for a special purpose, unique in its design, has been built in the company's shops at Omaha. It is a cattle-car, so arranged that at short intervals, in hot weather, cold water can be forced from a tank into pipes pierced with minute holes laid along and under the roof of the car and sprayed upon the cattle below. The utility of this car is yet to be tested. It cost about \$550. In the long ride from Pine Bluffs, Julesburg, Ogallala, and other points from which the largest numbers of cattle are shipped, such cars, it is hoped, can be used with profit.

Ordinarily the company is able to build all its own rolling-stock, except engines, at the Omaha shops. Here it does its own silver plating, its upholstering, and in fact nearly all of its mechanical work, except that which belongs to the rolling-mill at Laramie, and to the repair-shops at Rawlins. All passenger-cars have the Miller coupler and buffer, and the Westinghouse air-brake; the company own these rights in perpetuity.

Many new water-tanks have been put up or the old ones renewed since last year. These are mounted on iron columns, and are frost-proof and nearly fire-proof; the supports of the old tanks were ungainly and unsafe. New tanks of a similar kind will be placed along the remainder of the road. The company are making great improvements and additions to the water supply, not only at water-stations but also at other points. At Rawlins a 4-inch pipe is being laid from Cherokee Spring which will supply 55,000 gallons of water per day; the supply

All new stations are built on the south side of the road. The snow eddies and drifts, and blocks the track near stations on the north side.

The increase from the coal traffic can only be measured by the growth and settlement of the country along the main line, its branches, and the connecting lines. A coking-furnace has been erected by the company at Omaha, where experiments in coking the coal of the company are being made. No practical result has yet been reached.

During the last year the Kansas Pacific Railway has passed into the control of this company. Both roads have the same general manager and the same superintendent of telegraphs.

The increase of cattle traffic from the west has been nearly 40 per cent. Up to November 6, 1878, 4,082 car-loads of cattle were delivered at Omaha and Council Bluffs, and up to November 6, 1879, 5,694 car-loads had been delivered, an increase of 1,612. The total number of cars of cattle received at Omaha and Council Bluffs during the year 1878 was 4,780, and the total number for this year will be at least 6,980. The exact figures cannot be ascertained at the time of writing, nor can the exact number of loads of hogs and sheep delivered at these two stations during the past year be now given. The accounts are not all in, but judging from those received it is safe to say that these shipments of 1879 will exceed those of 1878 by at least 50 per cent.

The cattle trade of the Union Pacific is increasing rapidly, and a large share of the earnings of the road is derived therefrom. This traffic cannot be taken from it. Probably there is no part of the United States more adapted to raising cattle than the territory lying between Evanston and the North Platte. The largest cattle dealers say that here cattle care for themselves the year round. Since the settlement of the country there has been no winter when they have not found food and lived without shelter. Large tracts of bunch grass are left bare by the drifting of the snow. Five per cent. will cover the loss from inclement weather. To these lands young cattle are driven from Texas and sold at about \$9.50 per head. One year's growth adds at least \$6 to their value, and the second year about the same. Cattle thrive wonderfully upon this grass. Buyers of Texas cattle can brand their stock and herd them; or may herd them with the droves of large dealers, who charge one dollar per head a year for the service. In two years these cattle are fit for the Eastern market, and will be delivered by the dealers on the cars; and, if it is desired, sold for account of the owner. The cattle business appears to be very profitable and yet in its infancy. On a single day in October last, 241 car-loads of cattle were shipped on this road.

A considerable portion of the cattle arriving at Omaha and Council Bluffs are distributed through the rich farming regions of Eastern Nebraska and of Iowa. Here the farmers find greater profit in feeding their corn through the winter than in marketing it. In this way the cattle may be said to carry the corn to market. It saves handling. The business of thus feeding corn has more than doubled during the last year.

The company does all express business on the main line and on the feeding or other lines directly controlled by it. The economy of this is apparent. Every employé becomes an express agent without expense. The profits from this business are now over \$40,000 monthly. It is possible or probable, that, with the large extension of feeding lines and the natural increase of the express business, the income from this source will, in time, nearly pay the annual interest on the bonded debt. Many railroads have farmed out this business when the profits from it alone would pay a fair dividend—a fact suggestive of some irregularity in railway

inducements to emigrate should be held out. Only facts should be stated; and such a course would not be at variance with the comity of nations.

During the year ending November 1, 1879, the company has sold 220,781 $\frac{91}{100}$ acres of land for \$936,443.70. Emigration to lands along the line of the road is very large and in excess of last year. Agents are now in Sweden and Norway and elsewhere abroad, who have been sent out by the company to give correct information to persons desiring to emigrate. In Sweden and Norway many thousands are anxious to find new homes on or near this line and other Western roads. The ancestral farms have, from generation to generation, been cut up and divided among sons and daughters, until the portions are now too small to be again divided.

After careful consideration the directors do not recommend any change which would give all lands on one side of the road to the company, and leave the government all on the other side. Such a course would create endless confusion. Titles are settled and locations have been made under the present arrangement; besides, either the government or the road would almost certainly suffer injury by a redistribution. As now divided, good lands and bad lands are shared about alike. The company are making great efforts to secure immigration, and to those who wish to examine or purchase, they offer great inducements in the way of cheap transportation, low prices, and liberal terms of payment.

The road is in a prosperous condition, and promises this year to show gross earnings of over thirteen and a half million dollars, with operating expenses reduced to about forty-two per cent. of earnings. Out of net earnings it can, in our opinion, pay its bondholders their interest, and comply with the directions of the funding bill, which sets apart twenty-five per cent. of its net earnings, and still leave stockholders seven and a half per cent. Quarterly dividends of one and a half per cent. are already made.

Only brief reference can be made here to the climatic changes said to be taking place along the line. There has been a general increase in rainfall during the past few years. The line of separation between lands adapted to general farming and to grazing only is constantly moving westward. Lands are now producing fine crops of small grains, vegetables, and corn, that eight or ten years ago were included in the winter grazing regions. Grasses that formerly cured upon the stalk in August, now grow until the September or October frosts. In Eastern Nebraska the rains are heavier, *i. e.*, there are more rainy days and more frequent showers than formerly, and the rains continue later in the season. Sections of country can be named where, from greater rainfall and consequent increase in the volume of the bordering streams, lands which ten years ago were excellent farms have become almost untillable without drainage.

Exact figures showing the large increase from freight and passenger traffic and other statistics referring to the business of the road are fully given in the appendix to this report. It is enough to say that the increase from freights for the year ending September 30, 1879, has exceeded 4 $\frac{85}{100}$ per cent., or, say, \$388,245.26.

The policy of the company has been to foster its branches until they become self-sustaining. This is good policy, since, for example, on through traffic with points on the Utah and Northern, it gives the Union Pacific a haul over the entire line. Large shipments that formerly went via the Missouri River to Fort Benton and were distributed by wagon transportation from that point are now distributed from the terminal station of the Utah and Northern.

The company leased in March last the Colorado Central Railroad for a term of fifty years and guaranteed that thirty-five per cent. of the gross earnings should be applied upon the securities of the road. This leaves sixty-five per cent. to equip, maintain, and operate the road.

In order to give a concise view of the feeding lines directly connected with the Union Pacific Railroad, or in which it is interested, or whose building is contemplated, a brief description of them furnished to the directors by Mr. S. H. H. Clark, the general manager, is placed in the appendix.

It has been suggested that in view of the contingency of the branch or feeding lines becoming connected with other main lines of railway, and thus diverting their own business from the Union Pacific, it may be good policy for the government to invest the sinking fund in first-mortgage bonds of these branch lines, bearing seven per cent. interest, if satisfactorily guaranteed by the Union Pacific, and thus secure to the latter the business of said lines until the debt to the government is paid.

NATHANIEL NILES.
GEORGE B. SMYTH.
R. P. BUCKLAND.
CHARLES C. HOUSEL.
DANIEL CHADWICK.

To the Hon. CARL SCHURZ,
Secretary of the Interior, Washington, D. C.

A STATEMENT OF FEEDING LINES OF RAILROAD BUILT OR PROJECTED AND CONNECTING WITH THE UNION PACIFIC RAILROAD, FURNISHED BY MR. S. H. H. CLARK, GENERAL MANAGER OF THE UNION PACIFIC RAILROAD.

The Omaha and Republican Valley Railroad runs from Valley Station, 35 miles from Omaha, on Union Pacific Railroad, westwardly through Saunders and Butler Counties to Osceola, county seat of Polk County, 85 miles. The counties named are three of the richest and best agricultural counties in Nebraska, and since the opening of the Omaha and Republican Valley line are rapidly filling up with settlers. From Valparaiso, 38 miles from Valley, the Lincoln branch is being built through a rich valley, about 22 miles, to the State capital, and thence to Beatrice, 36 miles farther. The construction of this branch will not only put the Omaha and Republican Valley line in direct connection with those centering at the State capital, but will give the main line of the Union Pacific an outlet for travel and freight in that direction and open up a market for its western coal. A branch of the Omaha and Republican Valley is also being constructed from Osceola west to Stromsburg, 6 miles.

The Omaha, Niobrara and Black Hills Railroad is being constructed from Jackson, 99 miles west of Omaha, northward through Platte and Madison Counties, and will be completed to Norfolk, 47 miles north of Jackson, this year. A branch of this line is also being extended from Lost Creek, 7 miles north of Jackson, westward to Genoa, 12 miles. The Omaha, Niobrara and Black Hills line is projected to O'Neill City, near the northern boundary of Nebraska. It will open up nearly a dozen large and fertile counties in the Elkhorn, North Loup, and Niobrara regions, and will command the trade of the great stock-raising sections north and northwest of these, in Southern Dakota—the latter a field practically unoccupied by transportation lines; while, as its name would indicate, the ultimate object of this line is the Black Hills mining region. The character of the country it traverses guarantees for it a greater local traffic than could be offered a railroad going to the Black Hills by any other route; lumber, coal, and miscellaneous supplies northward, and live stock, grain, wool, &c., southward, will be leading articles of traffic for the immediate future.

The Hastings and Grand Island Railroad extends southward from Grand Island, on the Union Pacific Railroad, to Hastings, 27 miles, there connecting with the Saint Joseph and Western Railroad (formerly the Saint Joseph and Denver City Railroad), and with the latter forming a through line from Grand Island to Saint Joseph, Mo., 227 miles. This line traverses much of the famous Blue River region, a gently rolling, well watered, and exceptionally fertile country, passing through Kearney, Adams,

Clay, Thayer, and Jefferson Counties, Nebraska, and Washington, Marshall, Nemaha, and Brown Counties, Kansas. This entire region is rapidly filling up with a good class of citizens. The development, therefore, in progress along the road will soon furnish it a heavy local traffic, and with its eastern terminus at Saint Joseph, it must gather much through west-bound business, which centers there and at adjacent Missouri River points. This line will intersect the Omaha and Republican Valley Railroad in the latter's ultimate march southward to Marysville, Kans.

The Utah Central and Utah Southern Railroads.—The Utah Central runs southward from Ogden on the Union Pacific to Salt Lake City, 36 miles, there connecting with the Utah Southern. The latter extends in a generally southward course through the most fertile and thickly populated sections of Salt Lake and Utah Lake Valleys. At Junction, 12 miles south of Salt Lake City, it is joined by the Bingham Cañon and Camp Floyd Narrow-Gauge Railroad, extending westward 20 miles to Bingham, the center of a very rich and extensive gold and silver quartz and placer mining district. About 100,000,000 pounds of ore are received at Junction annually from this small feeder. At Sandy, 13 miles south of Salt Lake City, the Wahsatch and Jordan Valley Railroad, also a narrow gauge, turns eastward, penetrating and draining the famous little Cottonwood mining district, 20 miles distant, and proving a very valuable arm of the Utah Southern at Springville, 53 miles south of Salt Lake City. The Utah and Pleasant Valley narrow-gauge line turns southeast ward and extends to the Pleasant Valley coal mines, 56 miles distant. These connections, while not under control of the Utah Southern, hand down from rich mineral districts of the mountains a very large portion of its business. The Utah Southern proper extends to Juab, 105 miles south of Salt Lake City. Here is the initial point of the "Utah Southern Extension." The latter is completed to Deseret, 52 miles south of Juab, or 157 miles south of Salt Lake City, and is to be completed to the Frisco or Horn silver-mining district, 75 miles south of Deseret, early in 1880. From Frisco it is projected to the Leeds silver mines, about 100 miles farther south and near Utah's southern boundary. There is hardly a mile of the Utah Southern line that does not traverse a good agricultural and stock-raising country. It renders easily available at many points a vast mineral region, which extends almost continuously 150 miles along it in the Wahsatch Range on the east. Rich mines, whose ores are of such refractory nature that they must be shipped, are also clustered closely along it at several points on the west. Iron ores, shipped in large quantities to Salt Lake smelters for fluxing, are found in apparent inexhaustible quantities near Santaquin, a station 71 miles south of Salt Lake City. The Horn mines, as well as the mines of Leeds district, 100 miles southward, already give the road much business, and it is confidently believed that the former, with the various interests clustered about it and stimulated by it, will alone pay the road's operating expenses in the near future. Southeastern Nevada and Northern Arizona are also developing some good mineral districts, which will now soon make an exhibit in the business of the road. There is an unusually interesting field for tourists along this line which must soon command extensive travel. The grandeur of American Fork Cañon, the beauty of Utah Lake and its environs, and the stupendous wonders of the Great Gorge of the Colorado, all easily reached via this line, have a fame that will become world-wide. It should also be mentioned here that the valleys of Southern Utah are the only ones in our great inter-mountain country which will readily produce such semi-tropical fruits, as figs, almonds; and cotton has already been exported from them to some extent.

The Utah and Northern Railway (narrow gauge) stretches northward from Ogden, through Northern Utah, entirely across Eastern Idaho, and is at this date operated to Beaver Cañon, near the Southern Montana boundary, 274 miles north of Ogden. Grading is about completed to Red Rock, Montana, 30 miles north of Beaver Cañon. Unless unusually rigorous weather prevents, track will be laid on these 30 miles this season, making a complete north and south narrow-gauge line 304 miles in length. Surveys have been made for divisions or branches debouching from the constructed line at Beaver Cañon to Yellowstone National Park, 63 miles; from Henry Lake to Helena, Montana, via Madison Valley, about 240 miles; from the present temporary terminus to Helena, via Beaverhead and Jefferson Valleys, about 215 miles; from Portneuf Station, Idaho, west and northwest via Boise City to the Columbia River in Eastern Oregon, and various preliminary observations of routes in Utah, Idaho, Montana, and Oregon, discarded or yet to be adopted. It is not extravagant to say that the Utah and Northern Railway has now, and evidently will have for years to come, by far the most extensive and naturally rich tributary region of any line of similar length in the entire Trans-Missouri Country. Those portions of Idaho, Utah, Montana, and Western Wyoming whose traffic it already fairly controls, form an empire of 200,000 square miles, a region which even in the infancy of development is found to contain some of the largest and richest mineral belts and incomparably the most extensive and fertile valley and desirable pasture lands in the entire Rocky Mountain country. Yellowstone National Park, which all visitors pronounce the most prolific in amazing natural wonders and beautiful scenes of any spot of like area in the known

world, will, it is generally believed, from next season on, command very extensive tourist travel via the Utah and Northern, as it is now only 63 miles distant by easy natural grades from Beaver Cañon Station, or about 75 miles from Red Rock Station. The most fertile and thickly settled valleys of Northern Utah lie in the path of this line. The Salmon River and Yankee Fork gold and silver mining region, which is now shipping some very rich ores and is coming into prominence as a probable rival of Leadville in 1880, lies 150 miles west of the Utah and Northern Railway in Central Idaho, and has no other present or prospective outlet than the line under consideration. The vast salt deposits, which supply such a large demand in Montana, Idaho, and other Territories, are 85 miles east of the line in Eastern Idaho, and also shipped by it extensively. The Caribou gold and silver mines lie 100 miles east of Eagle Rock Station, and the Great Snake River gulch or placer Mines, which extend 400 miles along the stream named, are crossed at Eagle Rock. Montana, containing 16,000,000 acres of productive farm lands, 38,000,000 acres of grazing lands, an area underlaid with coal larger than the great State of Pennsylvania, and 14,000,000 acres of heavy pine forests, and whose mines have already yielded \$16,000,000, is in its earliest stages of development yielding the road a handsome revenue. Ores, bullion, hides, wool, beef, and salt will probably always be the principal articles of south-bound traffic, and mining, milling, and other machinery and miscellaneous supplies those north-bound. The shipments of ore must be especially large after this season, because of the nearness of the road to leading mines. The heavy immigration into Montana and the other vast unsettled regions adjacent must for many years make a handsome showing in the passenger business, as well as the tourist attractions of Yellowstone Park and other resorts, now almost unknown. One hundred miles of track were laid in 1878, and, with the 30 now in progress, 123 more will be laid this year.

There are no other projected lines of railway from main line of the Union Pacific Railroad at present.

The benefits and advantages, in a military point of view, derived by the government from these constructed and prospected lines of railway are very great.

*Earnings of the Union Pacific Railroad Company for the year ending September 30, 1879.**

From:	
Passengers.....	\$2, 999, 151 19
Government.....	147, 028 16
Mails.....	596, 775 00
Express.....	465, 358 29
Freight.....	7, 191, 028 76
Freight, government.....	312, 619 91
Freight, company.....	884, 206 47
Car service.....	8, 283 10
Miscellaneous.....	301, 891 30
Rents.....	39, 437 53
Total.....	12, 945, 779 71

* Earnings for October, 1879, estimated at \$1,533,580, and November, 1879, estimated at \$1,241,989.64, an increase of \$421,355 over October and November, 1878.

REPORT OF THE POSTMASTER-GENERAL

WASHINGTON, D. C., November 8, 1879.

RECEIPTS AND EXPENDITURES.

SIR: The total expenditures of this department during the fiscal year ended June 30, 1879, were..... \$33,449,899 45

The revenues were as follows:

Ordinary receipts.....	\$29,434,648 43
Receipts from money-order business.....	219,226 83
Receipts from official stamps and stamped envelopes	388,107 60
	30,041,982 86

Excess of expenditures over receipts.....	3,407,916 59
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Included in the above statement of receipts and expenditures is the sum of \$376,461.63 paid on liabilities incurred in previous fiscal years, and not properly chargeable to the expenditures of the last fiscal year. Deducting this sum from the aggregate amount leaves \$33,073,437.82 as the actual expenditures on account of service for the year.

The amount appropriated for service of the fiscal year 1878-'79, including sums appropriated by special acts, was.....	\$33,828,470 75
Amount expended for 1878-'79	33,073,437 82

Leaving an unexpended balance of appropriations for the year of.....	755,032 93
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This balance will be largely reduced when the unadjusted liabilities for the year have been reported and paid.

Table No. 2 (page 263) accompanying the report of the Third Assistant Postmaster-General, shows the condition of the several accounts on the 30th of September, 1879.

The expenditures and receipts of the department, therefore, on account of and appertaining to the business of the last fiscal year, (ex-

cluding expenditures and receipts on account of previous fiscal years,) are as follows, viz:

Expenditures.....	\$33,073,437 82
Receipts, ordinary, from money-order business, and from official stamps.....	30,041,982 86

Leaving an excess of expenditures over receipts chargeable against the appropriations from the Treasury, hereinafter enumerated, of... 3,031,454 96

The expenditures during the fiscal year were \$801,209.77 less than those of the preceding year. This reduction is chiefly due to the change in the law regulating the compensation of postmasters, from commission on stamps sold to commission on stamps canceled.

The total receipts for the year were \$764,465.91, or 2.6 per cent., more than those of the preceding year, and \$1,007,884.58, or 3.4 per cent., more than the estimates therefor. The increase in the amount of revenue received over the amount estimated may be attributed, in a great measure, to the revival of business, resulting in an increased demand for postage-stamps, postal cards, &c., the sales of which amounted to \$769,481.87 more than for the last fiscal year, and \$2,387,559.23 more than for 1877.

The States returning revenues in excess of one million dollars were, New York, with \$5,710,310; Pennsylvania, \$2,732,593; Illinois, \$2,398,627; Massachusetts, \$2,087,228; Ohio, \$1,976,440; Missouri, \$1,124,555; and Michigan, \$1,004,487. Alaska foots the list with a revenue of \$53.

Excluding official postage-stamps and money-order receipts from both fiscal years, there is an increase of ordinary receipts over past fiscal year of \$671,703.27, or 2.3 + per cent.

The expenditures and receipts by fiscal quarters, and the increase or decrease therein, as compared with the corresponding quarters of 1876-'77 and 1877-'78, are shown by table No. 3 (page 270) which accompanies the report of the Third Assistant Postmaster-General.

AMOUNT DRAWN FROM TREASURY ON APPROPRIATIONS.

The following amounts were drawn from the Treasury during the fiscal year on account of special and deficiency appropriations:

To supply deficiencies in the revenues for the year ended June 30, 1879, act of June 17, 1878.....	\$3,000,000 00
For transportation of the mails, railroads, for 1878, and previous years, act of March 3, 1879.....	166,392 27
For transportation of the mails, deficiency, 1876, and previous years, act of March 3, 1879.....	45,873 31
To pay George H. Giddings, late contractor, deficiency, 1876, and previous years, act of March 3, 1879.....	14,583 33
To pay H. G. Boardman, postmaster at Milton, Vt., act of June 19, 1878.	116 34
For payment of increased salary to letter-carriers, &c., act of June 28, 1879.....	71,000 00
	<hr/>
	3,297,965 25

ESTIMATES FOR 1881.

The estimated expenditures for the fiscal year ending June 30, 1881, are.	\$39,920,900 00
The ordinary revenues are estimated at	\$32,000,000 00
Estimated revenue from money-order business.....	210,000 00

Total estimated revenue for the fiscal year ending June 30, 1881.	32,210,000 00
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Estimated excess of expenditures to be appropriated out of the general Treasury as a deficiency.....	7,710,900 00
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The item for official postage-stamps has not been stated separately in the estimates for 1880-'81, for the reason that the official (or penalty) envelopes are, in a large measure, taking the place of official stamps, and the estimated revenue from this source has been included in ordinary receipts.

Table No. 1 (pages 256-267), accompanying the report of the Third Assistant Postmaster-General, furnishes the estimates in detail.

DEFICIENCY APPROPRIATIONS.

The following statement shows the condition of the appropriations from the general Treasury to supply deficiencies in the postal revenues, viz :

1. For the fiscal year ended June 30, 1877, the amount undrawn and unexpended was \$167,498.00, which, by operation of laws, was carried into the surplus fund of the Treasury on the 30th June, 1879, leaving no means available for the payment of unsettled liabilities incurred prior to July 1, 1877.

2. For the fiscal year ended June 30, 1878, an additional deficiency appropriation of \$166,392.27 was made, which amount was drawn from the Treasury and placed to the credit of the Post-Office Department, for the payment of indebtedness on account of said fiscal year.

3. For the fiscal year ended June 30, 1879, the amount appropriated from the Treasury to supply deficiencies in the revenues was \$4,222,274.72, of which \$1,222,274.72 remains unexpended and available for unadjusted liabilities for said fiscal year.

LIABILITIES.

The unpaid indebtedness of the department for the fiscal year ended June 30, 1879, is estimated at \$713,344.45, for the payment of which there is available, as above stated, the sum of \$1,222,274.72.

The expenditures and receipts of the department and the condition of accounts will be found in detail in the report of the Auditor for the Post-Office Department, hereto annexed.

POSTAGE-STAMPS, STAMPED ENVELOPES, AND POSTAL CARDS.

The number of ordinary postage-stamps issued during the fiscal year was.....	774, 358, 780, valued at	\$20, 117, 259 00
Newspaper and periodical stamps.....	1, 552, 172, valued at	1, 088, 412 16
Special stamps for the collection of postage due under act of Congress approved March 3, 1879.....	15, 667, 600, valued at	365, 957 00
Postal cards	221, 797, 000, valued at	2, 217, 970 00
Stamped envelopes, plain	80, 806, 700, valued at	2, 160, 417 92
Stamped envelopes, special-request	67, 058, 250, valued at	2, 139, 704 10
Newspaper wrappers	29, 697, 000, valued at	355, 218 90
Official postage-stamps.....	14, 201, 822, valued at	624, 999 95
Official stamped envelopes	17, 209, 150, valued at	469, 011 90
Aggregating.....	1, 222, 348, 474, valued at	29, 538, 950 93

INCREASE IN ISSUES OF POSTAGE-STAMPS, ETC.

Altogether there has been an increase in the aggregate value of the above issues over that of the issues for the previous fiscal year. There has been a decrease in several of the items, as shown in the following table :

Description.	Fiscal year ended June 30, 1878.	Fiscal year ended June 30, 1879.	Increase.	
			Value.	Per cent.
Ordinary postage-stamps	\$19, 468, 618 00	\$20, 117, 259 00	\$648, 641 00	3. 33
Newspaper and periodical stamps.....	1, 093, 845 30	1, 088, 412 16	*5, 433 14	*. 04
Postage-due stamps (first issue in the latter part of present fiscal year).....	.....	365, 957 00	365, 957 00	.....
Postal cards	2, 006, 300 00	2, 217, 970 00	211, 670 00	10. 55
Stamped envelopes, plain.....	2, 418, 102 91	2, 160, 417 92	*257, 684 99	*10. 65
Stamped envelopes, special-request.....	2, 183, 025 25	2, 139, 704 10	*43, 321 15	*1. 08
Newspaper wrappers	304, 645 60	355, 218 90	50, 573 30	16. 60
Total increase, ordinary issues.....	.....	.....	970, 402 02	3. 53
Official stamps, stamped envelopes and wrappers.....	1, 092, 647 70	1, 094, 011 85	1, 364 15	0. 13
Aggregate increase .....	.....	.....	971, 766 17	3. 40

* Decrease.

In sending through the mails the supplies represented by the foregoing statements only five packages were lost.

POSTAGE ON NEWSPAPERS AND PERIODICALS.

The total amount of postage collected during the year on newspapers and periodicals mailed to subscribers from known offices of publication was \$1,104,184.67, or \$859,160.66 on 42,958,033 pounds of matter at 2 cents per pound, and \$245,024.01 on 8,167,467 pounds at 3 cents per pound. The increase in the amount of postage collected during the year on this class of mail matter over that for the previous year is \$79,003.69, which, in view of the reduction in the rate of newspaper and periodical postage, which took effect on the 1st of May last, under the act approved March 3, 1879, is a very gratifying increase.

DEAD LETTERS AND OTHER MAIL MATTER.

The total number of letters and parcels sent to the Dead-Letter Office during the year was 2,996,513, or 190,292 less than the receipts of the previous year. The reduction may be attributed to the increased efficiency of the delivery service, and the growing popularity of our peculiar return-request system, by which not only the undelivered letters mailed in "special-request" envelopes supplied by the department are returned to the writers direct, but those in envelopes bearing only a business card, the name and address of the sender, a street and number, a post-office box, or other indication of origin, are promptly returned to the owners without the intervention of the Dead-Letter Office.

The extent to which the people avail themselves of this privilege may be illustrated by the fact that there were mailed in a single day at the New York post-office 15,625 letters in the special-request envelopes furnished by the government, and 86,753 in envelopes supplied by private enterprise bearing name and address or other designation by which the writer could be identified.

For convenience in treatment the dead matter was separated into the following classes: Ordinary mailed letters, 1,876,702; drop or local, 382,100; of foreign address, 91,121; of foreign origin, 164,223; held for postage, 306,344; misdirected, 58,754; without any address whatever, 7,944; returned from hotels, 47,166; fictitious address, 17,544; third and fourth class matter, 28,634; and 5,976 registered letters.

The amount of money taken from letters which could not be restored to the writers, and deposited in the Treasury, was \$3,323.39.

The amount of postage collected upon short-paid matter forwarded to destination, and unclaimed articles of the third and fourth class returned to the senders, was \$4,471.70.

A statement of the contents and final disposition of letters and packages will be found in the report of the Third Assistant Postmaster-General, and tables submitted therewith, pages 289-293.

STATISTICS OF REGISTRATION.

The total number of letters and parcels registered during the year was 5,429,022; of which 4,227,079 were domestic letters; 203,497 domestic parcels of third and fourth class matter; 163,684 letters registered to foreign countries; 3,097 parcels of third and fourth class matter registered to foreign countries, and 831,665 letters and parcels of official matter forwarded for the government, and by law exempted from the payment of registry fees. The amount of registry fees collected during the year was \$459,735.70; an increase over the preceding year of \$44,736.40. The increase in the number of letters and parcels forwarded was 530,218. The value of the official matter forwarded under registration for the Post-Office and Treasury Departments aggregates the enormous sum \$1,031,517,445.10. The extension of the registration system to arti-

cles of the third and fourth class of mail-matter has been received with great favor by the public. Out of 69,644 parcels of such matter registered at the New York City post-office, but five losses are reported, and these occurred on stage routes in the far West, and, upon investigation, may prove to have been simply delays occasioned by carelessness.

IMPROVEMENT OF THE REGISTRY SYSTEM.

Advantage was taken of the publication of a new edition of the postal laws and regulations to make a thorough revision of the registry system, by which its efficiency has been greatly increased. Distributing offices have been abolished, and all registered matter is now mailed direct to its destination; the through registered pouch system has been greatly extended; and all the blanks used for recording the registry business have been greatly simplified. The losses of registered matter during the year amounted to about one out of every seven thousand letters or packages forwarded.

STATISTICS OF TRANSPORTATION OF THE MAILS.

There were in the department on the 30th of June, 1879, 5,659 contractors for the transportation of the mails on public routes.

There were at the close of the fiscal year 1,948 special offices, each with a mail-carrier, whose pay from the department is not allowed to exceed the net postal yield of the office.

Of public mail-routes in operation there were 10,396 (of which 1,059 were railroad routes, being an increase of 59 routes of this class over the previous year), aggregating in length 316,711 miles; in annual cost, \$16,723,808. Adding the compensation of railway post-office clerks, route-agents, mail-route messengers, local agents, and mail-messengers, amounting to \$3,289,064, the aggregate annual cost was \$20,012,872.

The service was divided as follows:

Railroad routes: Length, 79,991 miles; annual transportation, 93,092,992 miles; annual cost, \$9,567,590; about 10.27 cents per mile.

Steamboat routes: Length, 21,240 miles; annual transportation, 5,091,474 miles; annual cost, \$754,388; about 14.81 cents per mile.

Other routes on which the mails are required to be conveyed with celerity, certainty, and security: Length, 215,480 miles; annual transportation, 69,248,339 miles; annual cost, \$6,401,830; about 9.24 cents per mile.

There were, at the close of the fiscal year, 4,465 offices supplied by mail-messengers, at an annual cost of \$664,174.

The railroad routes were increased in length 2,871 miles, and in cost \$995. This small increase in cost is owing to the reduction in the rate of pay under act of June 17, 1878.

The steamboat routes were increased in length 3,171 miles, and in cost \$1,905, and the "Star" routes 8,703 miles in length and \$686,887 in cost.

There was an increase over the preceding year in the total length of

routes of 14,745 miles ; in annual transportation, 9,247,430 miles ; and in annual cost, \$689,787. Adding the increase in cost for railway post-office clerks, route-agents, mail-route messengers, local agents, and mail-messengers, amounting to \$70,663, the total increase in cost was \$760,450.

COST OF RAILWAY SERVICE.

The cost of railway service on the 30th of June, 1879, was at the rate of \$9,692,590 per annum, an increase over the cost of the service during the preceding fiscal year of \$125,995. This increase does not, however, represent the actual rate of increase in the service, as account must be taken of the reduction of 5 per cent. in the rate of compensation from July 1, 1878, made under the act of June 17, 1878. The amount of this deduction is in round numbers \$400,000, making, with the \$125,995, an increase of \$525,995 for 1879 over 1878, being a little less than 5.5 per cent.

The general increase of business all over the country, and the reasonable certainty that the present prosperity will continue for some years to come, will require the appropriation for railway service to be increased at least 12 per cent. for the next fiscal year, and the estimate for that service is accordingly placed at \$10,000,000.

INCREASE OF RAILWAY POST-OFFICE LINES IN THE SOUTH.

The appropriation for railway post-office car service for 1880 is \$1,250,000. Under this appropriation new lines of postal cars have been established where they were most needed, especially in the Southern States, and the increase for the next fiscal year will not exceed 8 per cent. The estimate for this service for 1881 is therefore placed at \$1,350,000.

THE SPECIAL APPROPRIATION FOR PROPER FACILITIES.

The appropriation of \$150,000 to enable the Postmaster-General to obtain proper facilities for the prompt transmission of the mails by railroad companies has enabled the department to prevent injury to the service upon the most important lines by allaying the dissatisfaction of railroad companies at the general reduction of 10 per cent. and 5 per cent. additional upon their compensation ; and has in several instances enabled the department to secure the running of special trains of great value to the business interests of the country. I would therefore recommend that this appropriation be renewed for the next fiscal year, and that the amount be increased according to the estimates submitted by the Second Assistant Postmaster-General.

TRANSFER OF MAILS FROM DEPOTS TO POST-OFFICES.

I desire again to call the attention of Congress to the importance of fixing the relative rights and duties of railroad companies and the department in regard to the transfer of mails from stations to post-offices. Until this matter is settled upon an equitable basis it will be impossible properly to adjust the compensation of railroads for carrying the mail. It certainly seems an anachronism, to say the least, to expect because a

people of the sections interested, the star service has been extended to meet the necessities of the country. In so doing, an unavoidable deficiency of about \$150,000 has been incurred. To meet this there is a surplus in the appropriation for steamboat and railroad service of about \$250,000, and I would, therefore, recommend that the requisite amount be transferred from these appropriations to that for star service, thus obviating the necessity for a deficiency appropriation.

COMPENSATION FOR INCREASED SPEED AND INCREASED FREQUENCY
OF STAR SERVICE.

The operation of the present laws regulating the increase of compensation for increased speed and increased frequency of service upon star routes results in great loss to the government. These laws (sections 3960 and 3961 of the Revised Statutes) have been in force for many years, and are the source of nearly all the deficiencies in the appropriations for star service which have ever been created. They are as follows:

SEC. 3960. Compensation for additional service in carrying the mail shall not be in excess of the exact proportion which the original compensation bears to the original service; and when any such additional service is ordered, the sum to be allowed therefor shall be expressed in the order, and entered upon the books of the department; and no compensation shall be paid for any additional regular service rendered before the issuing of such order.

SEC. 3961. No extra allowance shall be made for any increase of expedition in carrying the mail unless thereby the employment of additional stock and carriers is made necessary, and in such case the additional compensation shall bear no greater proportion to the additional stock and carriers necessarily employed than the compensation in the original contract bears to the stock and carriers necessarily employed in its execution.

It frequently happens, especially in the mining regions of the West, that, at the time of advertising, service is not required upon new routes more frequently than once or twice a week; but after the contracts have been made and service begun, population increases along the line, and an increase of speed and more frequent service become necessary. Under such circumstances it is clear that the rate that was reasonable for service once or twice a week, through a sparsely-settled region, becomes exorbitant when multiplied by three or six to cover daily service. I would, therefore, recommend that section 3960 be so amended as to permit the Postmaster-General to advertise for new proposals for the increased service, the contract to be awarded to the lowest responsible bidder, as usual. Section 3961 should be so amended that when the cost of increased speed would amount to more than 50 per cent. of the cost of the original service the Postmaster-General should readvertise for service at the increased speed.

INCREASE OF STAR SERVICE IN THE SOUTHERN STATES.

The estimates for star service for the next fiscal year contemplate a continuance of the present efficient service in other States, and largely increased mail facilities in the States of Indiana, Ohio, Kentucky, South

Carolina, North Carolina, Tennessee, Georgia, Florida, Mississippi, and Alabama. This service has already been advertised, the contracts to begin July 1, 1880.

FAST MAILS TO HAVANA AND SOUTH AMERICA.

The efforts of the department to establish a fast-mail service with Havana via Cedar Keys and Key West in order to meet the demands of commerce, have failed for several years on account of the insufficiency of the compensation allowed by law for such service. If the Postmaster-General were authorized to contract for service between Havana and the United States ports mentioned, at a sufficient rate of pay to secure the necessary speed and frequency, the commerce of the country would be greatly benefited. I believe that a general law should be passed authorizing contracts for carrying the mail between the United States and West Indian and South American ports, in American-built steamers carrying the American flag, at a fixed minimum and maximum price, the amount to be expended being regulated by the annual appropriations. Or the service might be thrown open to competition in the same manner as the star service. The adoption of such a policy by Congress would enable this country to control the profitable commerce with South America and the West Indies, which is now almost monopolized by Great Britain.

FINES AND DEDUCTIONS.

The amount of fines imposed upon contractors and deductions made from their pay for failures and other delinquencies for the fiscal year ended June 30, 1879, was \$177,098.57, and the amount remitted for the same period was \$16,571.76, leaving the net amount of fines and deductions \$160,526.81.

MAIL-BAGS AND CATCHERS.

From Table G of the report of the Second Assistant Postmaster-General (page 162), it will be seen that the total number of new mail-bags purchased under contract and put into service during the year was 104,021, of which 14,021 were locked pouches for first-class matter, and 90,000 were canvas sacks for second, third, and fourth class matter. This is an increase in the number of mail-bags issued of 24,123 over the previous year.

The number of new mail-catchers issued was 300.

The total expense of mail-bags and mail-catchers, including repairs, was \$170,266.26. The average annual cost of the last three preceding years was \$171,588.10.

The total number of mail-bags repaired was 356,527, and the total cost of their repairs was \$37,613.10. Under the old system of repairs the cost would have been \$80,338.29. In the last four years since the old system of repairs was abolished the total saving has been \$192,282.06.

MAIL LOCKS AND KEYS.

The total expense of mail locks and keys during the year was \$12,780.55; the average annual cost for the last three preceding years having been \$12,021.66. The term of all contracts for mail locks and keys expired during the preceding year, and supplies have been kept up during the past year by repairs and small purchases from the late contractors. The greater portion of the mail-locks now in use are nearly worn out and are becoming insecure from their long subjection to the peculiarly hard usage of the mail service. They were procured under contracts made in 1870, and as experience has shown that ten years is the limit of duration for mail-locks, their further use is not compatible with the requisite security. The locks used for through-registered pouches are also no longer adapted to the service. I would therefore earnestly recommend that provision be now made for superseding at the earliest possible date the locks now in use by those of new and improved patterns. In this connection reference is made to the report of the Second Assistant Postmaster-General (page 57).

READJUSTMENT OF COMPENSATION TO RAILROADS.

I desire to renew the recommendation of my last report for the passage of a law readjusting the compensation of railroads for carrying the mail upon the basis of space, speed, and frequency, supplemented by the weight of mails carried. This would enable the department to designate every railroad in the country by name as a railway post-office line, which they all are now in fact. The only reason why they are not all so called is because section 4004 of the Revised Statutes allows additional pay for post-office cars, and to so designate all railroads would increase the annual expenditure, under the present basis of compensation, by over a million dollars; and hence the anomaly is presented of railway post-office lines which furnish apartments in cars only 10 feet 2 inches long by 6 feet 6 inches in width, and of route-agent lines upon which entire cars are furnished 55 feet long and 8 feet 9 inches wide, in both of which precisely the same work of distributing the mails is carried on.

RAILWAY POST-OFFICE LINES.

A tabular statement (I, page 164) hereto appended, shows that the number of railway post-lines in operation on the 30th of June, 1879, was 59, extending over 17,340 miles of railroad routes, an increase of 300 miles as compared with the preceding year.

The number of clerks in the service at the end of the fiscal year ending June 30, 1878, was 1,081, whose annual salaries aggregated \$1,260,590.

The number of clerks in the service at the end of the fiscal year ending June 30, 1879, was 1,091, whose annual salaries aggregated \$1,272,290, showing an increase of 10 clerks and of \$11,700 in salaries.

The annual miles of service performed by railway post-office clerks, route-agents, and mail-route messengers was 52,419,773. (See Table K, pages 168-213.)

CLASSIFICATION OF EMPLOYÉS OF THE RAILWAY MAIL SERVICE.

I most earnestly renew my recommendation of last year for the reclassification of the employés of the railway mail service as advised by the general superintendent of that service. No additional expense will be incurred, but the business of the department will be greatly facilitated and much annoyance will be spared to the appointment office which is now caused by the necessity of transferring employés from one class to another in order to avoid exceeding the appropriation. The railway mail service is the most important branch of the postal system. Under a judicious system of appointments and a tenure of office dependent upon merit alone, its efficiency has developed so that the enormous amount of 2,648,661,550 pieces of mail-matter were distributed by it during the past year with only one mistake in the disposition of each 3,469 pieces. The work performed by all the employés is the same, varying only in amount, and yet under the present mode of appropriating for postal clerks, route-agents, mail-route messengers, and local agents, two men working in the same car and performing the same service frequently receive a different salary simply because one is paid out of the appropriation for route-agents and the other out of that for postal clerks. This is the greatest evil now existing in the service and it can be completely remedied by the classification of the employés as recommended.

POST-ROUTE MAPS.

The work of preparing and keeping up the post-route maps has been continued in the topographer's office during the past year, rendering essential aid to the officers and employés of the department, particularly to those of the railway mail service, in a proper understanding of the requirements, actual and prospective, for the speedy distribution of the mails. These maps are also in great request by the other departments of the public service.

During the past year, besides successive editions of previously issued maps, new maps of the States of Minnesota, South Carolina, and Georgia, Arkansas, and the Indian Territory have been completed, and a map of Dakota Territory is nearly ready. New maps of Louisiana and of the Pacific States and Territories are required, and will be designed to take the place of the provisional copies hitherto in use.

The publication is desirable of an extended table of distances for use in the settlement of mileage and telegram accounts referred to the topographer by this and other departments for his certificate, for the compilation of which the force at his disposal is not sufficient.

The work of this office is necessarily increasing with the extension of

the mail-service, and I have, therefore, in my present estimates, requested a somewhat larger appropriation than that for the past year.

OPERATIONS OF SPECIAL AGENTS.

The duties of the special agents of this department in exercising surveillance over the hundred thousand persons who are legally entitled to have access to the mails have been performed with great efficiency. Robbery of the mails and stealing the postal revenues by employes of the department cannot escape detection and punishment, and the general knowledge of this fact should greatly assist postal employes to resist temptation.

A system of thorough inspection of post-offices by special agents, embracing the solvency of the postmaster's bond, the organization of his office and the manner of conducting it, condition of accounts and government property, etc., has been perfected to the great advantage of the service.

SPECIAL AGENTS SHOULD BE STYLED INSPECTORS OF POSTS.

I recommend that the designation of the officers known as special agents be changed to inspectors, as more appropriate and less liable to confusion with others in public and private employment. This title is given to similar officers in the postal service of other countries. It should be borne in mind that the duties of these officers are by no means confined to the detection and arrest of offenders against the postal laws. On the contrary, most of their time is occupied in the inspection of the postal service, the examination of postmasters' accounts, the investigation of the solvency of their bonds, the collection of debts due the department by postmasters, and the general supervision of all officers and employes of the postal service.

ARRESTS AND CONVICTIONS OF OFFENDERS AGAINST POSTAL LAWS.

The number of persons arrested during the year was 552, of whom 459 were prosecuted in United States courts and 93 in State courts. Of the former, 191 were convicted, 11 acquitted, 10 escaped, 39 proceedings were dismissed, 2 forfeited bail, and 206 await trial. There were 45 highwaymen arrested for mail-stage robberies, the prosecution of 42 being in United States courts and 3 in State courts. The arrests are classed as follows:

<i>Subject to jurisdiction of United States courts.</i>	
Postmasters	46
Assistant postmasters	22
Clerks in post-offices	15
Postal clerks and route-agents	10
Letter-carriers	11
Mail-carriers	17
Other employes	8
Highwaymen	42
Burglars	83
All others for various offenses	205

Subject to jurisdiction of State courts.

Highwaymen	3
Burglars	55
All others for various offenses	35
	<hr/> 552

CASES ACTED UPON BY SPECIAL AGENTS.

The number of cases made up for investigation by special agents during the year was 23,242, classified as follows :

Registered cases, class A.—2,759.—Registered letters reported lost, 2,109, of which 1,995 contained cash, \$21,790.07 ; 114 contained money-orders and exchange, \$35,697.05. Of this number, 1,120 were recovered, viz, 1,067 containing 53 money-orders and exchange to the value of \$10,872.21, and cash \$9,873.59 ; reported rifled of contents, 578, containing cash \$8,080.10. Of this number, investigation proved 121, alleged to contain \$1,751.09, to have been falsely reported. Reported tampered with, 72, containing \$1,144.33, of which 47, said to contain \$910.85, were erroneously reported. The disbursements of moneys collected and recovered, on account of lost and rifled registered letters, amounted in 566 cases to \$16,952.85, of which amount \$7,554.79 was paid in 260 cases of loss occurring in this year, and the remainder, \$9,398.06, in 306 cases of previous years.

Ordinary cases, class B.—15,261.—Ordinary letters reported lost and rifled, 14,538, of which 5,802 contained cash \$40,056.78 ; 1,353 money-orders and exchange, \$453,947.96, and 7,383 contents not specified. Of this number, 1,480 were recovered, viz : 397 containing cash \$2,942.02 ; 184 containing money-orders and exchange \$49,619.99, and 899 contents not specified. The disbursements of moneys collected and recovered on account of lost ordinary letters amounted, in 126 cases, to \$719.49, of which amount \$177.75 was paid in 17 cases of loss occurring in this year, and \$541.74 in 109 cases of previous years.

Robberies of mail-stages on the highway, 50 ; robberies of post-offices, 98 ; burning of mail, 4 ; and charges of depredation against postmasters, 246.

Miscellaneous Cases, Class C.—5222.—This class comprises failing contractors, defaulting postmasters, change of postmasters, solvency of sureties of postmasters, inspection of post-offices, post-routes, and forgery of money-orders.

POST-OFFICES ESTABLISHED AND POSTMASTERS APPOINTED.

The report of the Appointment Office shows the following :

Number of post-offices established during the year	2, 676
Number discontinued	1, 079
Increase	1, 597
Number in operation June 30, 1878	39, 258
Number in operation June 30, 1879	40, 855
Number filled by appointment of the President	1, 711
Number filled by appointment of the Postmaster General	<u>39, 144</u>

Appointments were made during the year—	
On resignations and commissions expired.....	5,627
On removals	558
On changes of names and sites	187
On deaths of postmasters	378
On establishment of new post-offices	2,676

Total appointments	9,426
Number of cases acted on during the year	10,778

NUMBER OF SPECIAL AGENTS AND EMPLOYÉS OF THE RAILWAY MAIL SERVICE.

The number and aggregate compensation of special agents, railway post-office clerks, route-agents, mail-route messengers, and local agents in service during the year ended June 30, 1879, were—

* 45 special agents	\$145,122 64
1,091 railway post-office clerks.....	1,272,290 00
1,143 route agents.....	1,072,420 00
241 mail-route messengers	167,649 00
134 local agents	112,531 00
	<hr/> 2,770,012 64

EMPLOYÉS IN THE POST-OFFICE DEPARTMENT.

The following table shows the number of employés in the Post-Office Department; also, the number of postmasters, contractors, clerks in post-offices, railway post-office clerks, route-agents, and other officers in service June 30, 1878, and June 30, 1879:

	1878.	1879.
Departmental officers and employés:		
Postmaster General.....	1	1
Assistant Postmasters General	3	3
Superintendent of money-order system.....	1	1
Superintendent of foreign mails.....	1	1
Chief clerk to the Postmaster-General.....	1	1
Chiefs of divisions.....	4	5
Topographer for department.....	1	1
Disbursing officer and superintendent of building.....	1	1
Law clerk		1
Stenographer	1	1
Appointment clerk		1
Superintendent of blank agency		1
Chief clerks of bureaus	5	5
Clerks, messengers, watchmen, &c.....	354	391
	<hr/> 373	<hr/> 414

Postmasters and other officers and agents:

Postmasters.....	39,258	40,855
Contractors.....	5,996	5,659
Clerks in post-offices	4,651	4,894
Letter-carriers	2,275	2,359
Railway post-office clerks	1,081	1,091

* Other special agents charged to separate appropriations.

	1878.	1879.
Postmasters and other officers and agents—Continued.		
Route-agents	1, 143	1, 143
Mail-route messengers	241	241
Local agents	143	134
Special agents	59	54
Total in service	55, 220	56, 844

CLERKS IN POST-OFFICES.

The increasing demands of the postal service call for a large increase in the appropriation for the payment of clerks in post-offices. The estimate for this item is greatly below the actual needs of the service. I have so estimated, however, because I did not desire to increase the growing disparity between the revenues and expenditures of the department. To provide a less sum for the employment of clerks than I have estimated for will cripple the work of post-offices, and in many instances delay the transmission of the mails. Many localities can now be mentioned where an insufficiency of clerical force retards the dispatch of the mails; and, in fact, nearly all complaints of delays are traceable to the inability of postmasters to properly handle the enormous amount of matter deposited in and passing through their offices.

THE FREE-DELIVERY SYSTEM.

The increase in the appropriation for the free-delivery system during the last fiscal year was only \$50,000 over that of the preceding year. It enabled the department to partially provide for the increased demands of the service in some of the large cities, but it was not sufficient to justify a considerable extension of the system. New service was, however, established at Oakland, Cal., at a cost during the year of \$3,272.01. The remainder of the \$50,000 increase of appropriation, to wit, the sum of \$46,727.99, was expended in the employment of additional carriers in the large cities and the incidental expenses connected therewith.

POSTAGE ON LOCAL MATTER.

The postage on local matter during the last year exceeded that of the preceding year in the sum of \$360,272.35, and it also exceeded the entire cost of the free-delivery service in the sum of \$864,771.14. Much of the increase in the amount derived from local postage is believed to have come from the extension of the territorial limits supplied by carriers in several of the large cities.

The increase in postage on local matter in the free-delivery cities last year was 14.74 per cent.; the increase in the cost of the service during the same period was only 6.34 per cent.

The average cost per piece of handling local matter was 2.40 mills, or a reduction of .10 of a mill as compared with last year, although the average cost per carrier (attributable to the increase of compensation provided in the act of February 21, 1879) was \$24.27 in excess of the previous year.

Very little complaint of the frequency of the service or of the man-

ner of performing it has reached the department of late. It may be said to have attained great success. With larger appropriations more frequent deliveries could be secured, and such improvement would meet with universal commendation in the larger cities.

AN INSUFFICIENT APPROPRIATION FOR LETTER-CARRIERS.

After the passage of the act of February 21, 1879, and in accordance with its provisions, the free-delivery cities were divided into two classes. Those with populations exceeding seventy-five thousand were placed in the first class, and those with smaller populations in the second class. In cities of the first class the pay of carriers was also classified under said act; one-half of the carriers employed therein being paid at the rate of one thousand dollars per annum, the other half at the rate of eight hundred dollars per annum. The pay of carriers in cities of the second class was fixed at eight hundred and fifty dollars per annum.

To meet the cost of thus increasing the compensation of carriers the sum of \$71,000 was appropriated. It proved, however, to be insufficient. In the attempt to comply with the law the appropriation was unexpectedly exceeded in the sum of \$1,706.61, and the discovery of the fact was not made until the payments for the month of May were completed. No payment of the additional compensation to carriers provided by the act referred to was made for the month of June, and that sum is still due. I have, therefore, to recommend that a deficiency of \$23,706.61 be provided for, \$22,000 thereof to be expended in payment of the amount due carriers for the month of June, as before stated, and the remainder to cover the deficiency mentioned above.

STATISTICS OF THE FREE-DELIVERY POST-OFFICES.

The aggregate results for the fiscal year were as follows:

AGGREGATE RESULT OF FREE-DELIVERY SERVICE FOR THE FISCAL YEAR ENDED JUNE 30, 1879.

		Increase over last year.	Decrease over last year.	Per cent. of increase.
Number of offices	88	1		1.13
Number of carriers	2,359	84		3.56
Mail letters delivered	213,996,862	10,534,834		4.93
Mail postal cards delivered	40,299,460	6,422,304		15.90
Local letters delivered	64,716,184	7,229,057		11.19
Local postal cards delivered	31,904,474	2,709,864		8.49
Registered letters delivered	1,410,044	117,600		8.34
Newspapers delivered	102,365,370	10,437,360		10.19
Letters collected	233,174,241	37,125,400		14.66
Postal cards collected	62,130,708	15,298,588		24.62
Newspapers collected	39,892,632	4,297,413		10.77
Whole number of pieces handled	809,854,065	94,071,915		11.61
Pieces handled per carrier	339,060	24,431		7.20
Total cost of service, including pay of special agents	\$1,947,706 61	\$123,585 76		6.34
Average cost per piece in mills	2.40		.10	
Average cost per carrier*	\$823 34	\$24 27		2.74
Amount of postage on local matter	\$2,812,523 66	\$300,272 85		12.04
Excess of postage on local matter over the total cost of service	\$964,771 14	\$236,686 59		37.60

* Based on the aggregate (\$1,942,261.15) paid carriers, including incidental expenses at the several offices, less \$5,445.46 paid special agents.

NUMBER OF DOMESTIC MONEY-ORDER OFFICES.

At the commencement of the last fiscal year the total number of post-offices authorized to issue and pay domestic money-orders was 4,143. During the year 400 new offices were added to the list and 31 were discontinued, making the total number of such offices in operation on the 30th day of June, 1879, 4,512.

ISSUES AND PAYMENTS OF DOMESTIC MONEY-ORDERS.

During the year 6,372,243 domestic money-orders, amounting to \$88,254,641.02, were issued, and 6,360,611, amounting to \$87,427,047.26, were paid. The amount of such orders repaid during the same period was \$579,152.94, which, added to the amount of the orders paid, makes the payments amount to \$88,006,200.20. The excess of the issues over the payments was \$248,440.82.

The fees received by postmasters for the issue of domestic money-orders amounted to \$798,625.65. The average amount of such orders issued was nearly \$13.85, being about 66 cents less than the average of the preceding year, and the average fee received for each order was 12.53 cents, being 0.21 less than the average of the preceding year.

Of the total amount of orders paid, about \$41,325 were orders issued to the War Department for payment of claims for bounty and back pay due by the United States to colored soldiers for services during the late war. These orders were all transmitted to the postmaster by whom payable through the office of the superintendent of the money-order system, and with them were transmitted certain blank forms supplied by the War Department and relating to the claims, which it was made the duty of the paying postmaster to cause to be properly filled out and duly signed. As, by request of the War Department, these orders were only to be paid to the payees named in the corresponding advices, and were not, like other money-orders, to be transferable by endorsement, they often gave rise to considerable correspondence, and in all cases entailed extra labor upon the respective postmasters, for which they received no additional compensation.

INCREASE IN THE MONEY-ORDER BUSINESS.

By the foregoing statement, when compared with that relating to similar transactions of the previous year, an increase of \$6,812,276.15, or 8.36 per cent., is shown in the amount of the orders issued; of \$6,655,592.06, or 8.24 per cent., in the amount of the orders paid; and of \$83,364.45, or 11.65 per cent., in the amount of fees received.

REVENUES AND EXPENSES OF THE MONEY-ORDER SYSTEM.

The Auditor has reported the following statement of revenue which accrued from domestic money-order transactions during the fiscal year ended June 30, 1879:

Fees received on domestic money-orders issued.....	\$798,625 65
Premiums, &c.....	721 44
Total.....	799,347 09
Commissions and clerk hire.....	\$512,550 52
Incidental expenses.....	31,946 76
Lost remittances.....	4,364 50
Bad debts.....	26,524 54
Net revenue.....	223,960 77
	799,347 09

The revenue, \$223,960.77, from the domestic business is \$21,008.49 greater than that of the previous year, being an increase of 10.35 per cent.

Allowances for clerk hire amounting to \$177,439.00 were made during the last year at several of the larger post-offices out of the surplus commissions accruing from their money-order business over and above such amount of commissions as, when added to the postmaster's salary, would make his entire compensation \$4,000 per annum, the limit fixed by law.

The allowances are made at such offices in lieu of commissions when the exigencies of the service require additional clerical labor, and are included in the foregoing statement of the Auditor, in the item of "commissions and clerk hire."

REMITTANCES OF SURPLUS FUNDS.

During the past fiscal year the aggregate amount of surplus money-order funds accruing at the smaller post-offices and remitted by them to the larger post-offices, designated as their depositories, was \$54,266,677.08.

LOST REMITTANCES.

In the last annual report it was stated that nine cases, amounting to \$1,320.00, of remittances alleged to have been lost in the mails, remained unsettled June 30, 1878. The amount involved in these cases, however as since ascertained, should have been reported as \$1,323.00; and there were two cases, amounting to \$502.50, which occurred prior to June 30, 1878, but were not brought to the attention of the department until after the close of that fiscal year, making the total number of unsettled cases eleven and the amount involved \$1,825.50. During the year ended June 30, 1879, in thirty-two cases remittances amounting to \$6,698.00 were reported as lost, making a total of forty-three cases, amounting to \$8,523.50, giving rise to investigation by the department.

Of this amount, \$3,589.50 were allowed to the postmasters who made the remittances; \$1,235.00 were recovered by special agents in the service of the department; \$760.00 were charged to the remitting postmasters; and, pursuant to act of Congress approved June 14, 1878, the loss of four remittances, amounting to \$487.00, burned with the mail car en route January 7, 1875, was assumed by the department.

Ten cases of remittances, amounting to \$2,452.00, remained unsettled at the end of the fiscal year.

The discrepancy of \$775.00 between the amount, \$3,589.50, reported above as allowed to postmasters on account of remittances lost in the mails, and the amount, \$4,364.50, reported by the Auditor as so allowed, is owing to the fact that a credit of \$775.00 was authorized by this department during the year ended June 30, 1877, which was not settled by the Auditor until after the commencement of the succeeding year.

TRANSFER OF MONEY-ORDER FUNDS AND DRAFTS.

In case of money-order offices at which the amount required to pay orders when presented is either habitually or occasionally in excess of the amount received from the sale of orders and from depositing post-offices, postmasters are authorized to make transfers of funds from their postage account to their money-order account to meet the deficiency arising from such excess in the payments.

In cases where the amount of postage funds was insufficient or not available for this purpose, postmasters at offices east of the Rocky Mountains were allowed a definite amount of credit with the postmaster at New York, N. Y. Drafts amounting to \$8,295,931.50, against credits so allowed, have been paid by the postmaster at New York, N. Y., during the last fiscal year.

To meet similar requirements in the States and Territories of the Pacific slope, where drafts upon New York are not at all times available, postmasters were furnished with funds, amounting to \$144,750, by the postmaster at San Francisco, Cal., and \$20,910 by the postmaster at Portland, Oreg.

At certain post-offices, where large sums are required to meet payments of mail-contractors and other creditors of the department, the transfer of funds from the money-order to the postage account is, when necessary, specially authorized by the department.

The transfers from the money-order to the postage account during the last year amounted to \$462,658.48, and from the postage to the money-order account to \$654,229.71, leaving a balance of \$191,571.23 to the credit of the postage account.

MONEY-ORDERS ERRONEOUSLY PAID.

In the last annual report it is stated that claims for reimbursement on account of the alleged erroneous payment of thirty-one money-orders, amounting to \$587.15, remained unsettled at the close of the year. Since the end of the period to which that report refers, additional cases of twenty-one orders, amounting to \$401.90, alleged to have been erroneously paid prior to July 1, 1878, have been brought to the notice of the department.

Sixty-two orders, amounting to \$1,676.34, were alleged to have been erroneously paid during the year, being at the rate of 1 erroneous payment in 102,591 orders paid, making a total of 114 alleged erroneous payments, amounting to \$2,665.39, under investigation during the year.

Nine of these orders, amounting to \$203.33, were afterward ascertained to have been paid to the proper person; in case of twenty-eight orders the whole amount, \$746.30, was recovered by special agents of this department. In case of four others, amounting to \$50.85, the loss was assumed by the department; the amount of forty-three orders, \$1,111.04, was charged to the paying postmaster, or through him to the clerk in his office through whose negligence the error occurred; in case of eleven orders the payee was required to sustain the loss, \$222, and the cases of nineteen orders, amounting to \$331.87, remained unsettled on the 30th of June, 1879.

DUPLICATE MONEY-ORDERS.

The total number of duplicate money-orders issued was 18,975, being an increase of 2,399 over the number of such orders issued during the previous year. Of this number 17,304 were issued in lieu of orders lost in the mails, or which, by reason of imperfect address or change of residence, or from some unknown cause, had failed to reach the payee; 906 were issued in lieu of orders alleged to have been lost through the negligence or misfortune of the remitters, payees, or indorsees; 255 were issued to remitters in lieu of orders payment of which had been prohibited in pursuance of section 3929 of the Revised Statutes of the United States, because drawn in favor of the proprietors or agents of fraudulent lotteries, gift enterprises, or other "schemes or devices for obtaining money through the mails by means of false or fraudulent pretenses, representations, or promises"; 91 in lieu of orders which had become invalid by reason of having received more than one indorsement; 304 in lieu of orders invalidated because not presented for payment within one year after the date of their issue, and 115 in lieu of orders mutilated or rendered illegible while in the hands of remitters, payees, or indorsees.

INTERNATIONAL MONEY-ORDER BUSINESS—REVENUES AND EXPENSES.

The Auditor has not reached a final adjustment of the accounts of the last quarter of the fiscal year, required to be made with the proper accounting officers of the several foreign countries with which money-order conventions are in force. For this reason he is unable, at this time, to furnish an exact statement of the revenue for the year derived from the exchange of money-orders with those countries.

The revenue and expenses for the year ended June 30, 1878, as stated by the Auditor in the case of each of the foreign countries named, are given below under the appropriate heading.

EXCHANGE OF MONEY-ORDERS WITH SWITZERLAND.

At the commencement of the last fiscal year 180 money-order offices were in operation authorized to issue orders payable in Switzerland, and to pay orders drawn in that country. Three offices were added to the list during the year, making a total of 183 in operation at its close.

The number of such orders issued in the United States during the year was 5,135, amounting to \$96,171.25, of which amount \$459.13 was afterward repaid to the remitters, and the number paid in the United States was 2,010, amounting to \$55,820.99.

The fees received for Swiss orders issued amounted to \$2,758.50.

A comparison of this business with that of the previous year exhibits an increase of \$3,890.51, or 4.21 per cent., in the amount of orders issued; of \$2,034.27, or 3.78 per cent., in the amount of orders paid; and of \$462.25, or 20.13 per cent., in the amount of fees received. The Auditor's statement of the Swiss revenue and expense account for the year ended June 30, 1878, is as follows:

Fees received	\$2, 635 25
Paid for commissions and clerk hire.....	\$778 44
Paid for incidental expenses	1 99
Excess of commissions paid Switzerland.....	371 27
Cost of exchange.....	549 39
Net revenue.....	934 16
	<hr/> 2 635 25

EXCHANGE OF MONEY-ORDERS WITH GREAT BRITAIN.

At the commencement of the last fiscal year 1,014 money-order offices were in operation authorized to issue orders payable in the United Kingdom of Great Britain and Ireland, and to pay orders drawn in that country. Eight offices were added to the list during the year, and one was discontinued, leaving a total of 1,021 in operation at its close.

The number of such orders issued in the United States during the year was 64,310, amounting to \$894,859.25, of which amount \$2,242.07 was afterward repaid to the remitters, and the number paid was 19,740, amounting to \$345,761.09.

The fees received for orders issued amounted to \$27,753.

A comparison of this business with that of the previous year shows an increase of \$87,675.93, or 10.86 per cent., in the amount of the orders issued, a decrease of \$17,442.09, or 4.80 per cent., in the amount of the orders paid; and an increase of \$2,677.25, or 10.67 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account with Great Britain for the year ended June 30, 1878, is as follows:

Amount received for fees on orders issued.....	\$25, 075 75
Net loss.....	10, 178 82
	<hr/>
Total	35, 254 57
Amount paid for commissions and clerk-hire	\$21, 351 22
Amount paid for incidental expenses	200 96
Excess of commissions paid	4, 435 58
Cost of exchange	9, 260 81
	<hr/> 35, 254 57

EXCHANGE OF MONEY-ORDERS WITH GERMANY.

At the commencement of the last fiscal year 659 money-order offices were in operation authorized to issue orders payable in the German

Empire, and to pay orders drawn in that country; and 14 offices were added to the list during the year, making a total of 673 in operation at its close.

The number of such orders issued in the United States during the year was 47,342, amounting to \$829,788.36, of which amount \$3,630.34 was afterward repaid to the remitters; and the number paid was 25,462, amounting to \$639,542.68.

The fees received for orders issued amounted to \$22,927.

A comparison of this business with that of the previous year exhibits an increase of \$46,371.52, or 5.92 per cent., in the amount of orders issued, a decrease of \$27,270.02, or 4.09 per cent., in the amount of orders paid and an increase of \$1,316.50, or 6.09 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account with Germany for the year ended June 30, 1878, is as follows:

Amount received for fees on orders issued	\$21,610 50
Amount paid for commissions and clerk hire.....	\$11,834 78
Amount paid for incidental expenses	58 47
Excess of commissions paid Germany.....	1,805 19
Cost of exchange.....	2,501 67
Net revenue.....	5,410 39
	<hr/>
	21,610 50

EXCHANGE OF MONEY-ORDERS WITH CANADA.

At the commencement of the last fiscal year 375 money-order offices were in operation, authorized to issue orders payable in the Dominion of Canada, and to pay orders drawn in that country. No new offices were added to the list during the year.

The number of such orders issued in the United States during the year was 16,231, amounting to \$316,283.98, of which amount \$966.42 was afterward repaid to the remitters; and the number paid was 20,757, amounting to \$339,072.45.

The fees received for orders issued amounted to \$7,217.80.

A comparison of this business with that of the previous year exhibits an increase of \$56,901.55, or 21.93 per cent., in the amount of orders issued; a decrease of \$112.44, or 0.03 per cent., in the amount of the orders paid, and an increase of \$1,163.30, or 19.21 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account with Canada for the year ended June 30, 1878, is as follows:

Amount of fees received on orders issued.....	\$6,054 50
Excess of commissions received.....	406 76
	<hr/>
Total	6,461 26
Amount paid for commissions and clerk-hire.....	\$5,417 04
Amount paid for incidental expenses.....	995 85
Net revenue.....	48 37
	<hr/>
	6,461 26

EXCHANGE OF MONEY-ORDERS WITH ITALY.

At the commencement of the last fiscal year 142 money-order offices were in operation, authorized to issue orders payable in the Kingdom of Italy, and to pay orders drawn in that country. One office was added to the list during the year, making a total of 143 in operation at its close.

The number of such orders issued in the United States during the year was 4,070, amounting to \$103,352.11, of which amount \$140 was afterward repaid to the remitters; and the number paid was 349, amounting to \$10,040.69.

The fees received for orders issued amounted to \$2,760.25.

A comparison of this business with that of the previous year exhibits a decrease of \$2,181.42, or 2.06 per cent., in the amount of orders issued; an increase of \$2,169.57, or 27.81 per cent., in the amount of the orders paid, and a decrease of \$56.25, or about 2 per cent., in the amount of fees received.

The Auditor's statement of the revenue and expense account with Italy, for the year ended June 30, 1878, is as follows:

Amount of fees received on orders issued.....	\$2,816 50
Net loss.....	948 04
<hr/>	
Total.....	3,764 54
Amount paid for commissions and clerk-hire.....	\$598 41
Amount paid for incidental expenses.....	28 60
Excess of commissions paid Italy.....	962 58
Cost of exchange.....	2,174 95
<hr/>	
	3 764 54

GENERAL FINANCIAL RESULTS OF THE MONEY-ORDER BUSINESS.

The gross number of domestic and international money-orders issued during the year was 6,519,331, amounting to \$90,495,095.97; and the gross number paid, 6,428,929, amounting to \$88,817,294.16.

The net revenue derived from the transactions of the domestic money-order business is \$223,960.77, as reported by the Auditor, without taking into account the additional expenses, paid out of appropriations, hereinafter to be mentioned.

In addition to the expenses enumerated in the foregoing statement made by the Auditor, the following items of expense, amounting to \$210,665.56, which are fairly chargeable to the money-order system, were paid out of general appropriations, viz: Salaries to 30 employes in the Superintendent's office, \$40,100; salaries to 101 employes in the money-order division of the Auditor's office, \$116,280; books, blanks, and printing furnished for the money-order system by the Public Printer, \$49,285.56; and books, blanks, and stationery not included in the last item, estimated at \$5,000. After deducting the above-enumerated items of expense from the total net revenue, stated as above at \$223,960.77,

there remains an absolute net profit to the credit of the system amounting to \$13,295.21 in excess of all legitimate expenses.

The sum of \$219,226.83, being the net proceeds of the domestic money-order business for the fiscal year ended June 30, 1879, less the loss on account of the international business for the previous year, as reported by the auditor, has been deposited with the Treasury Department to the credit of the United States for the service of the Post-Office Department. The sum of \$191,571.23, due the postage account, by reason of the excess of transfers, heretofore mentioned, from that account to the money-order account, has been paid over.

FOREIGN MAILS.

The total weights of the mails dispatched from the United States to countries of the Universal Postal Union (the Dominion of Canada excepted) during the year were as follows: Letters, 102,980,282 grams, equal to 3,632,910 ounces; printed matter and samples of merchandise, 444,141,226 grams, equal to 15,668,291 ounces, being an increased weight over 1878 of 232,199 ounces of letters, and 1,139,429 ounces of printed matter and samples. A statement is appended of the weight of mails dispatched to each postal union country. (Pages 405-409.)

The number of letters exchanged with other countries not embraced in the Universal Postal Union, the Dominion of Canada excepted, was 685,188, of which number 396,915 were sent to and 288,273 received from such countries.

COST OF OCEAN MAIL SERVICE.

The payments made during the fiscal year 1879 for the sea conveyance of United States mails amounted to \$198,908.06, being an increase of \$1,631.91 over the amount paid for the same service during 1878. Of this sum \$153,749.64 was paid for the trans-Atlantic service, \$11,004.39 for the trans-Pacific service, and \$34,154.03 for the service to Canada, the West India Islands, Mexico, Central American and South Pacific States, Venezuela, Honduras, Brazil, and Uruguay.

The particulars of these several services are appended to this report, page .

The additional sum of \$28,053.47 was recognized and paid for the Atlantic transportation of British closed mails from New York to England from January 1, 1877, to September 30, 1878, and credit claimed therefor by this department in the quarterly accounts with the British office. Adding to this sum the payments made on account of the United States ocean service, the total amount paid during the year to the different lines of ocean mail steamers, for transportation of mails to foreign countries was \$226,961.53.

The aggregate amount of the quarterly balances paid to the United States during the year on the settlement of the postage accounts with countries of the Universal Postal Union was \$54,469.30, and the aggre-

gate amount of the quarterly balances paid by the United States to the same countries was \$38,275.79.

The sums paid to this department by other postal union administrations on account of the United States sea and territorial transit of open and closed mails amounted to 514,633.53 francs (\$101,675.30); and the sums paid by this department to other postal union administrations for the foreign sea and territorial transit of United States mails amounted to 257,291.39 francs (\$50,429.11).

UNIFORM RATES OF POSTAGE TO ALL COUNTRIES OF THE UNIVERSAL POSTAL UNION.

The ratifications by the United States of the Universal Postal Union Convention were duly exchanged at Paris on the 26th February, 1879, and its provisions were carried into operation on the 1st of April, 1879, superseding from that date the general postal union treaty concluded at Berne, October 9, 1874.

Article 5 of the Paris Convention establishes general rates of postage throughout the entire extent of the Universal Postal Union, with authority, however, to levy additional charges for the correspondence subjected to the sea-transit rates of 15 francs per kilogram of letters and postcards, and 1 franc per kilogram of other articles; but as the correspondence sent from the United States to distant countries and colonies of the union to which these sea-transit rates are applicable, constitute a very inconsiderable part of the mail matter sent to postal union destinations, I deemed it expedient, in view of the desirability of fixing uniform postage rates, to waive the right to levy additional charges upon the correspondence addressed to such countries and colonies; and accordingly issued an order directing the regular rates of union postage to be levied and collected in the United States on all correspondence exchanged within the Universal Postal Union (Canada excepted), without regard to distance or routes of transmission; thus realizing at once in our postal union relations uniformity of postal charges, the chief result which the system of the Universal Postal Union is designed ultimately to accomplish throughout the world.

ADMISSIONS TO THE UNIVERSAL POSTAL UNION.

Since the conclusion of the Convention of Paris, the following accessions have been made to the Universal Postal Union:

1. The British Colonies of Newfoundland, Gold Coast, Senegambia, Lagos, Sierra Leone, Falkland Islands, and British Honduras, admitted from April 1, 1879.

2. The principality of Bulgaria, admitted from April 1, 1879.

3. The Leeward Islands (British), viz: Antigua, Dominica, Montserrat, Nevis, St. Christopher, and the Virgin Isles, admitted from July 1, 1879.

4. The Republic of Liberia, admitted from July 1, 1879.

5. The Republic of Honduras, admitted from October 1, 1879.

The United States of Venezuela have declared diplomatically their adhesion to the Universal Postal Union from the 1st of January, 1880.

The Republic of Chili, which was a party to the Convention of Paris, was unable to carry it into operation on the 1st of April, 1879, and its adhesion to the union has been indefinitely postponed.

INDEMNITY FOR LOST REGISTERED ARTICLES.

In my last report I recommended the necessary legislation to enable this department to accept the general regulation of the Universal Postal Union relative to the payment of a limited indemnity for registered articles lost or destroyed in the United States postal service. The Convention of Paris provides for the payment of 50 francs to the sender, or at his request to the addressee, of a lost registered article, by the administration upon whose territory or in whose maritime service the loss has occurred, except in case of *force majeure*, but stipulates as a temporary measure that the administrations of the countries beyond Europe, whose legislation is at present opposed to the principle of responsibility, may postpone the application of said regulation until the time when they shall have obtained legislative authority to subscribe to it. Although the payment of indemnities for registered articles lost or stolen in the mails is not sanctioned by our laws or applied in our domestic service it is very generally practiced in other countries of the Universal Postal Union with which we exchange registered correspondence, and I therefore renew the request that authority be given by law to carry into effect this provision of the Paris Convention, both as to domestic and foreign registered matter.

COLLECTION OF CUSTOMS DUTIES UPON FOREIGN BOOKS RECEIVED BY MAIL.

The annoying inconveniences and delays to which American students and scholars have been subjected in obtaining single volumes of books mailed to them from abroad, in consequence of the regulation requiring all dutiable articles to be delivered to officers of the customs for the collection of duties, have been remedied by a new regulation adopted in pursuance of the authority given in section 17 of the act of March 3, 1879, which provides that books received from countries or colonies of the Universal Postal Union, which are found to be dutiable, shall, when addressed to post-offices other than the exchange office of receipt, be promptly transmitted by mail to the addressees, charged with the amount of customs duties levied thereon; which amounts postmasters at the offices of destination are required to collect on delivery and remit by first mail thereafter, under registration, to the collector of the customs of the district in which the exchange post-office of receipt is situated.

Under the General Postal Union Treaty concluded at Berne, books received from postal-union countries which were chargeable with customs duties, were held to be unmailable matter, and were immediately returned to the country of origin, thus imposing a complete embargo on the receipt of books by mail from abroad, and cutting off the facilities previously afforded by the mails for obtaining early copies of foreign literary and scientific works. The convention of Paris readopted the provision of the Berne treaty forbidding the transmission by mail of any packet whatever containing articles liable to customs duty, but added a stipulation that in case a packet falling under this prohibition should be delivered by one administration to another administration of the union, the latter was to proceed to dispose of it according to its interior laws and regulations. In pursuance of this provision the regulation of this department was modified by directing the delivery of dutiable articles by postmasters at exchange offices of receipt to collectors of the customs, with notice of such delivery to the addressees. Although this modified regulation effected an improvement in the treatment of dutiable books, it was not satisfactory either to the Treasury officials or the public, as it failed in many cases to secure the collection of the customs duties, and subjected addressees residing at places distant from ports of entry to vexatious delays and expenses incident to the employment of agents to pass their books through the custom-house. The new regulation obviates these delays and expenses, by insuring a prompt delivery of books at the office of destination in any part of the United States on payment of the customs duties, and cannot fail to satisfy those of our citizens who are accustomed to the use of the mails as the only practicable means of obtaining early access to foreign publications of scientific or literary interest.

TREATMENT OF OTHER DUTIABLE ARTICLES IN THE MAILS.

A similar regulation is needed for the treatment of other articles of mail matter received from foreign countries, which are subject by our laws to customs duty, and I respectfully recommend that the provision of section 17 of the act of March 3, 1879, authorizing the Secretary of the Treasury and the Postmaster-General to adopt regulations for the delivery to addressees in the United States of dutiable books, with collection of customs duties thereon, be extended to embrace all articles of dutiable matter received in the mails from foreign countries.

As soon as provision is made for the transmission by mail and delivery to addressees of any article of dutiable mail matter received from abroad, it will be possible for this department to conclude arrangements with other postal administrations for the reciprocal exchange of small objects of merchandise, for which no provision is made in existing postal treaties or arrangements with foreign countries. Special arrangements of this character, commonly known as "parcel posts," are in operation between most European countries with satisfactory results, serving as

important auxiliaries to commerce, and affording convenient and rapid facilities for the interchange of small articles of scientific, literary, and social interest and importance.

FOREIGN MAIL STATISTICS.

In order to obtain the necessary data for estimating approximately the number of letters, postal cards, newspapers, and other articles of printed matter, commercial papers, and samples of merchandise, and amounts of prepaid and unpaid postage thereon, exchanged in the mails with foreign countries, instructions have been issued to all United States exchange post-offices for foreign mails to take an actual count semi-annually, during the first seven days of October and April of each year, with such details as are required for statistical purposes, and to enable this department to supply the International Bureau of the Universal Postal Union with the particulars of the United States postal service annually called for by that bureau.

PROTECTION TO POSTMASTERS IN PERSON AND PROPERTY.

I desire, respectfully, to call your attention to the fact that there is no United States statute imposing a penalty upon any one for assaulting or molesting a postmaster in the discharge of his official duties, as in the case of revenue officers, and I earnestly request that Congress be urged to pass such a statute.

Since my last report a decree has been rendered in the circuit court of the United States in and for the southern district of New York, upon a suit brought by Christopher C. Campbell *vs.* Thomas L. James, postmaster at New York, for relief against alleged infringements of letters patent for an improvement in post-office post-marking and canceling hand-stamps, granted to Marcus B. Norton on the 14th day of April, 1863, which post-office post-marking and canceling hand-stamps, it is claimed, have been for more than ten years and are now in general use in all the principal post-offices of this country. When suit was instituted against Mr. James, the United States attorney for the southern district of New York was instructed by the Attorney-General to appear and defend the suit. The case was tried upon its merits, and was decided adversely to the defendant. The court held substantially that the patent was a valid one; that the defendant had infringed and was liable for costs, charges, and damages, and ordered an account to be taken of the profits, gains, and advantages which have in any way been received or made, or which had arisen or accrued on account of the infringements, and also of the damages in addition thereto, if any, which the complainant has sustained by reason of the said infringements. Such accounting is now being taken. The validity of this patent and the utility of the invention were adjudged and affirmed, I am informed, in 1864, by the United States circuit court for the northern district of New York, and also by the Court of Claims in 1867. Reports to the same effect were

made by committees in the Thirty-ninth, Forty-first, and Forty-second Congresses.

Other postmasters than Mr. James are threatened with suits for like infringements; and there is great danger that they will be subjected to expense, unless some satisfactory adjustment shall be made.

In this connection, I desire to call attention to the fact that there is no provision of federal law to secure "certificates of probable cause" to United States officials, other than Treasury officials, in cases of adverse judgments for acts done in their official capacity. In the present instance, Mr. James, as postmaster, uses canceling-stamps furnished by this department. The court adjudges him to have infringed a patent by such use.

The judgment for damages is against him personally. In like cases, the property of Treasury officials is protected by law from levy. I submit that similar protection is due to all government employés, when acting in the line of their duty.

THE NEW CLASSIFICATION OF MAIL-MATTER.

The law providing for a new classification of mail-matter, and readjusting the rates of postage thereon, passed at the last session of the Forty-fifth Congress, which went into effect on the first day of May last, has given universal satisfaction.

In framing regulations to carry it into successful operation, the department has endeavored to display the same liberal spirit which actuated Congress in its passage. Such reports as have been received from various officers of the service show that it is better understood by the public than the former law, has served very much to diminish complaint against the administration of the different post-offices throughout the country, and has removed very much of the friction that existed in the service under the old law. Especially is this true in respect to second-class matter.

The difficulties which presented themselves under the old law in determining the boundary line between periodical publications of a general character and those which are designed primarily for advertising purposes, have been very materially reduced by a simple regulation providing for the entry at the post-office where mailed of any publication which had been determined to be of the second class, and the printing of a certificate of entry on each copy of the publication issued. This is practically in accordance with the recommendation made by me in my report for 1877, with this exception, that the entry is only made upon the voluntary request of the publisher or publishers.

As an indication of the popularity of this regulation, I call attention to the fact that up to the first day of November about twenty-five hundred publications have been entered in accordance with the regulations, which is nearly, if not quite, one-third of all those mailed as second-class matter, including among the number nearly all the leading publications

of the country. I am confident that the remaining ones will all, or nearly all, of them enter, and that when they shall have so entered the solution of this vexed question will be reached.

LOTTERY LETTERS.

By the act of July 12, 1876 (19 Statutes, p. 90), section 3894 Revised Statutes was amended by striking out the word "illegal" preceding the word "lottery," and it is suggested that sections 3929 and 4041, Revised Statutes, be also amended by striking out the word "fraudulent" preceding the word "lottery" in each section, which will make the legislation more harmonious and effective.

It would aid the department in the execution of the intent of the law, if the provision of section 3929, requiring the return to the writers of registered letters addressed to such schemes, were in terms extended to include all letters so addressed.

Under the sections referred to orders have been issued, to the 10th day of October, 1879, against 117 individuals or companies engaged in fraudulent schemes, requiring the return of registered letters to the writers, and the refusal to issue or to pay to such persons or companies any money orders, and directing the return of the sum indicated to the sender on application. But one of these orders has been successfully contested and its revocation demanded and granted.

On the 4th day of October, 1879, upon an opinion given by the Assistant Attorney-General for the Post-Office Department, an order was issued to postmasters directing them to refuse to mail or register letters or circulars addressed to lottery companies, or to individuals, when addressed to them as agents for such companies. The opinion upon which this order was based was in brief that under section 3894, Revised Statutes of the United States, the only recognition in the postal laws of lottery companies is the declaration that "no letter or circular concerning lotteries" * * * "shall be carried in the mails"; and imposing a fine upon "any person who shall knowingly deposit or send anything to be conveyed by mail in violation of this section"; that the entire postal correspondence of a lottery company acting under its charter is a violation of this prohibition, and that an agent in the execution of his agency can claim no right not accorded to his principals; that a lottery company chartered by State authority is not a citizen of the United States, and correspondence concerning its business, being excluded by law from the mails, such company cannot claim postal facilities. Under this order a large number of letters addressed to a lottery company, or to a private individual as an agent of such company, were held by the postmaster at Louisville, Ky., and suits were at once instituted by said agent against the postmaster, which, under instructions from the Attorney-General of the United States, on my application to him, were defended by the United States district attorney for that district, and, as representing the department, by the Assistant

Attorney-General for the Post-Office Department. The decision has not yet been rendered in the United States circuit court, and I will avail myself of that decision, when announced, to communicate further the views of this department upon this subject.

Upon the question whether, under the present statute, the correspondence reaching an individual addressed to him personally under seal, can be held, although the person openly and notoriously advertises himself as an agent of a lottery company and invites letters "concerning lotteries" to be thus addressed to him, and communications so addressed reach the office in extraordinary numbers, the department is not fully advised. Whether an individual may forfeit his right to use the mail for legitimate purposes by voluntarily mingling such correspondence with prohibited matter, so that the department must carry both or neither, is a question upon which additional legislation might render the purpose of the statute altogether unquestionable.

The carriage by the mail of newspapers, containing lottery advertisements soliciting violations of the postal laws, renders the successful enforcement of the statute now in force still more difficult.

The department has caused inquiry to be made by its special agents and from postmasters at various points to enable it to form a proximate estimate of the quantity of letters and circulars "concerning lotteries" which reach their post-office of destination and are there withheld from delivery by reason of the evidence apparent upon the matter itself of its illegal character. The details are as yet too incomplete to lay before you, but they already disclose the fact that the postal service is used to an almost inconceivable extent to foster and sustain these fraudulent schemes.

OUR POSTAL SERVICE COMPARED WITH THAT OF ENGLAND AND FRANCE.

In accordance with the suggestion made in my annual report for 1877, Mr. W. A. Knapp, chief clerk of the department, who had been requested by the Secretary of the Treasury to proceed to London, England, upon business connected with refunding, was directed by me to prolong his stay in London for a sufficient time to examine the operations of the British postal service, and to visit France to inspect the postal service of that country. The results of his observations will be found appended to this report (pages 307-329), and his suggestions are commended to the serious consideration of Congress. I desire to make public acknowledgment of my appreciation of the kindness and courtesy displayed by the postal administrations of England and France in affording to the representative of this department every possible facility in pursuing his investigations.

DISPOSAL OF VALUELESS PAPERS ON FILE.

This department is put to great inconvenience by the accumulation of records, files, and papers, many of which are of no value at this

The room which they occupy is very much needed for other purposes; many of them are stored in the upper story of the department building, and are of such a nature as to threaten the safety of the building in case of fire. I have not felt authorized to order the destruction of any of these papers, without authority given by Congress. I earnestly recommend that Congress enact a law giving the Postmaster-General authority to destroy or sell for waste paper such records and papers as are mentioned in the accompanying report of the Auditor as having no permanent value.

THE NEW EDITION OF THE POSTAL LAWS AND REGULATIONS.

In accordance with the provisions of section 1 of the act of March 3, 1879, providing for the preparation and publication of a new edition of the postal laws and regulations, appropriating \$20,000 for the same, and authorizing the Postmaster-General to designate two officers of this department to prepare such work, Messrs. A. H. Bissell, law clerk, and Thomas B. Kirby, stenographer of the department, were appointed to edit and superintend the publication of the same. The work has been done to the entire satisfaction of the department, and all postmasters and employés of the railway mail service have been furnished with the new regulations. Frequent applications are made to the department by the public for copies of this book, which the department is unable to supply.

I would therefore recommend that the Public Printer be authorized to print a new edition from the stereotype plates, to be sold to the public at cost.

THE POSTAL GUIDE.

A contract was made with Houghton, Osgood & Co., of Boston, Mass. for the continuation of the publication of the Postal Guide during the present fiscal year. The form of the Guide has been changed, and the lists of post-offices are now to be published annually, with monthly corrections. The monthly numbers of the Guide also contain all orders and rulings of the department, and the necessity for issuing circulars to postmasters is thus obviated, thereby saving much expense for printing and a large amount of clerical labor in the department. The present appropriation is only sufficient for an edition of 46,500 copies, which is now barely enough to supply the officers and employés of the postal service, and will be entirely inadequate for the next year. I would recommend that the appropriation for next year be \$30,000, and that authority be given to the Postmaster-General to contract for the publication of the Guide for a term of five years, as was done by the act of June 23, 1874. The usefulness of the Postal Guide in its present form, in maintaining uniformity in the postal system, and thereby increasing the efficiency of the service, is so great that I can hardly conceive of a more serious misfortune than the failure of Congress to provide for a continuance

of its publication and an extension of its circulation to keep up with the growth of the postal service. If, as is hoped, authority is given to the Postmaster-General to contract for the publication of the Guide for a term of five years or less, he should be authorized, in case of necessity, to continue the contract with the present publishers for another year, in order to avoid a discontinuance of the publication pending the awarding of a new contract. It is doubtful if as favorable a contract as the present could be made in the existing state of the market for labor and material.

THE WASHINGTON CITY POST-OFFICE.

In accordance with the joint resolution of June 27, 1879, the commission appointed to lease a building in Washington, D. C., for the purpose of a city post-office, have leased the building known as the Seaton House, on Louisiana avenue and C street, near Seventh street, for the term of five years, at an annual rental of \$5,000. The removal of the city post-office from the department building will greatly assist in the transaction of business by affording much-needed additional room.

THE PHILADELPHIA POST-OFFICE.

Attention is called to the urgent necessity for the prompt completion of the new post-office building at Philadelphia, Pa. The new building could, with adequate appropriations, be made ready for occupancy in six months, and the building now occupied is entirely too small for the proper transaction of the postal business of the second city in the Union.

RESULTS OF A COUNT OF ALL MATTER MAILED.

In order to enable the department to procure reliable statistics of the amount of domestic mail-matter actually transmitted in the United States mails, an annual count has been ordered upon the first seven days of November in each year of all matter mailed at all post-offices and postal cars. The returns for the count of November, 1879, now coming in when tabulated will show with almost entire accuracy the business transacted by this department. The count at New York City shows that there were mailed at that office during the first seven days of November, 1879, 2,352,308 letters, 648,353 postal cards, 2,561,011 pieces of second-class matter, 1,513,530 pieces of third-class matter, and 118,088 pieces of fourth-class matter, making a grand total of 7,193,290 pieces of mail matter originating at that office during the week. The details of the count at a few of the principal cities of the Union and in the Railway Mail Service will be found appended to this report, pages 352-367.

Very respectfully, your obedient servant,

D. M. KEY,
Postmaster-General.

The PRESIDENT.

PAPERS

ACCOMPANYING

REPORT OF THE POSTMASTER-GENERAL

REPORT OF THE FIRST ASSISTANT POSTMASTER-GENERAL.

POST-OFFICE DEPARTMENT,
OFFICE OF THE FIRST ASSISTANT POSTMASTER-GENERAL,
Washington, D. C., November 7, 1879.

SIR: I submit herewith the following statistical tables exhibiting in detailed forms the operations of the free-delivery and of the appointment division of this office for the fiscal year ended June 30, 1879. The increased business of those divisions over that of the previous fiscal year, as shown by these statements, is of a very satisfactory character.

Very respectfully,

JAS. N. TYNER,
First Assistant Postmaster-General.

Hon. D. M. KEY,
Postmaster-General.

Total operations of the appointment division of the office of the First Assistant Postmaster-General for the year ended June 30, 1879.

States and Territories.	Post-offices.				Postmasters.			
	Established.	Discontinued.	Names and siles changed.	Appointments on change of names and siles.	Resigned and commissions expired.	Removed.	Deceased.	Total number of cases.
Alabama.....	110	28	7	9	192	29	22	388
Alaska.....			1	1	2			2
Arizona.....	26	5	8	3	23	3		64
Arkansas.....	146	62	16	7	219	18	4	465
California.....	52	39	11		100	6	10	209
Colorado.....	45	17	1	1	83	7	3	156
Connecticut.....	6	2	8	2	25	4	2	42
Dakota.....	87	14	20	5	47	14	1	183
Delaware.....	1				7	1		9
District of Columbia.....					1			1
Florida.....	44	9	5	2	49	12	4	123
Georgia.....	97	30	12	1	149	9	18	315
Idaho.....	14	14	5	3	24	1		58
Illinois.....	46	27	17	2	313	15	9	427
Indiana.....	64	25	4	3	283	33	10	428
Indian Territory.....	15	7	2	1	19	1	1	46
Iowa.....	57	46	11	1	217	20	10	361
Kansas.....	212	49	53	38	249	13	7	583

Total operations of the appointment division, &c.—Continued.

States and Territories.	Post-offices.				Postmasters.			Total number of cases.
	Established.	Discontinued.	Names and sites changed.	Appointments on change of names and sites.	Resigned and commissions expired.	Removed.	Deceased.	
Kentucky	04	47	0	4	233	26	16	425
Louisiana	52	22	6	2	63	8	13	164
Maine	16	9	1	—	64	13	11	114
Maryland	32	8	5	3	63	6	10	124
Massachusetts	0	3	1	—	46	3	6	68
Michigan	73	40	8	5	163	33	7	324
Minnesota	88	35	26	10	120	23	4	296
Mississippi	50	18	11	4	82	7	14	101
Missouri	95	55	23	4	299	10	16	507
Montana	23	16	3	2	28	3	2	75
Nebraska	85	32	26	18	113	18	4	278
Nevada	22	4	3	2	27	5	1	63
New Hampshire	9	5	2	1	28	6	3	53
New Jersey	9	5	7	3	47	5	1	84
New Mexico	21	15	5	—	23	2	2	68
New York	64	13	10	5	228	49	32	306
North Carolina	107	42	18	11	162	16	9	354
Ohio	79	25	7	—	271	23	15	420
Oregon	49	24	7	3	74	4	3	161
Pennsylvania	78	35	24	5	336	27	26	526
Rhode Island	1	—	1	1	6	—	4	12
South Carolina	37	14	9	1	72	2	1	135
Tennessee	109	31	15	4	212	25	20	412
Texas	173	86	10	7	263	7	16	555
Utah	18	10	4	—	28	4	2	66
Vermont	4	3	—	—	45	2	—	56
Virginia	106	45	9	6	183	10	11	364
Washington	36	7	5	—	52	3	—	103
West Virginia	35	23	6	3	118	6	1	189
Wisconsin	58	34	21	4	165	17	6	301
Wyoming	13	8	2	—	12	—	—	35
Total	2,676	1,070	480	187	5,627	558	378	10,778

Statement of the operations of the free-delivery

Post-offices.	Number of carriers in service June 30, 1879.	Delivered.					
		Mail.		Local.		Registered letters.	Newspapers.
		Letters.	Postal cards.	Letters.	Postal cards.		
Albany, N. Y.	27	2,192,106	407,873	232,938	193,511	7,731	1,929,404
Allegheny, Pa.	11	1,024,187	192,366	128,168	71,138	2,854	662,519
Atlanta, Ga.	6	779,185	289,324	71,983	78,033	12,684	567,475
Baltimore, Md.	67	5,427,752	984,320	1,230,360	924,373	21,284	2,403,061
Bangor, Me.	4	270,670	60,683	24,363	7,921	3,522	148,692
Boston, Mass.	109	10,049,114	2,402,886	4,759,650	2,307,273	45,232	5,689,937
Bloomington, Ill.	6	686,570	136,772	24,822	26,333	3,057	303,431
Brooklyn, N. Y.	93	5,851,622	1,288,971	1,457,651	1,070,921	25,488	2,698,861
Buffalo, N. Y.	36	3,507,303	478,456	477,296	393,832	26,614	2,126,249
Burlington, Iowa.	6	609,753	112,689	39,939	33,522	2,803	451,571
Camden, N. J.	6	844,842	134,086	56,828	43,087	1,754	283,884
Charleston, S. C.	8	502,718	117,719	62,922	70,250	4,625	306,133
Chicago, Ill.	162	19,562,513	3,543,725	3,713,585	2,258,594	185,021	6,291,023
Cincinnati, Ohio.	73	7,334,321	1,115,675	1,616,226	970,285	33,829	2,455,480
Cleveland, Ohio.	34	3,937,299	1,033,458	572,017	335,699	40,402	2,037,998
Columbus, Ohio.	12	1,223,551	300,453	103,305	104,694	8,866	796,761
Covington, Ky.	5	293,814	71,677	20,731	18,860	1,086	188,512
Davenport, Iowa.	8	540,775	120,615	38,977	31,867	2,882	377,438
Dayton, Ohio.	12	1,115,090	296,815	129,074	84,381	8,866	682,729
Des Moines, Iowa.	7	692,213	186,537	55,435	40,939	2,654	434,711
Detroit, Mich.	31	4,624,279	905,171	583,332	221,045	25,305	2,555,083
Dubuque, Iowa.	5	544,294	152,851	27,588	26,872	4,951	337,627
Easton, Pa.	6	983,982	451,870	102,518	112,188	1,319	838,066
Elizabeth, N. J.	6	439,511	93,482	65,724	26,362	1,119	370,181
Elmira, N. Y.	7	779,591	173,703	52,917	25,624	5,262	325,375
Erle, Pa.	7	667,053	59,105	56,861	39,014	1,021	464,369
Evansville, Ind.	7	584,395	171,005	34,136	41,781	5,270	562,584
Fall River, Mass.	*6	470,568	38,513	26,127	14,516	505	379,682
Fort Wayne, Ind.	7	831,150	92,968	83,144	85,438	3,547	680,975
Grand Rapids, Mich.	8	964,795	251,186	129,563	70,705	7,406	673,043
Harrisburgh, Pa.	6	386,308	105,293	27,379	25,235	1,192	302,143
Hartford, Conn.	11	938,447	186,036	205,695	112,024	2,683	790,693
Hoboken, N. J.	4	267,074	74,646	17,678	20,607	1,246	101,913
Indianapolis, Ind.	23	2,870,903	557,407	313,597	183,929	1,867	1,524,173
Jersey City, N. J.	18	956,828	190,479	177,013	125,532	3,667	511,615
Kansas City, Mo.	11	2,223,228	455,740	157,140	101,187	16,200	969,669
Lafayette, Ind.	5	331,401	108,321	30,860	13,741	2,097	260,922
Lancaster, Pa.	5	546,596	169,426	34,190	23,015	1,360	316,951
Lawrence, Mass.	8	697,423	74,055	52,586	60,817	1,056	567,411
Leavenworth, Kans.	5	394,782	74,372	16,390	15,158	2,039	268,904
Louisville, Ky.	39	3,127,595	737,445	378,213	425,042	30,240	1,464,127
Lowell, Mass.	10	633,738	108,072	90,340	50,519	1,670	317,646
Lynn, Mass.	7	595,074	138,557	44,670	72,857	669	323,907
Manchester, N. H.	5	570,551	134,373	27,543	38,594	6,287	483,831
Memphis, Tenn.	13	1,369,770	177,608	86,939	85,245	11,221	396,489
Milwaukee, Wis.	26	3,342,681	493,192	385,809	373,293	23,191	1,250,676
Minneapolis, Minn.	10	707,792	126,753	87,506	68,878	6,151	562,601
Mobile, Ala.	6	320,997	62,202	30,597	21,921	2,255	333,113
Nashville, Tenn.	10	1,194,294	282,116	95,650	75,791	15,144	845,875
Newark, N. J.	24	1,930,774	515,603	413,784	282,417	8,456	1,015,777
New Bedford, Mass.	7	741,025	64,173	56,917	31,329	681	419,777
New Haven, Conn.	16	907,390	159,408	125,863	82,150	2,013	769,727
New Orleans, La.	47	1,789,745	235,467	378,573	297,048	23,992	969,717
New York, N. Y.	440	42,938,460	7,264,740	24,759,629	9,161,028	320,265	12,812,771
Norfolk, Va.	5	539,644	141,704	45,760	45,431	1,549	384,709
Oakland, Cal. (9 mos.)	6	250,447	32,290	19,745	11,367	666	149,700
Omaha, Nebr.	6	706,735	114,861	57,686	51,347	6,310	473,700
Oswego, N. Y.	6	420,641	100,906	26,810	14,000	1,364	265,746
Paterson, N. J.	7	478,901	75,143	49,307	32,230	1,604	437,694
Peoria, Ill.	8	653,863	185,083	38,796	32,478	3,716	419,586
Petersburgh, Va.	5	455,975	93,378	15,908	17,373	2,707	326,697
Philadelphia, Pa.	253	23,497,592	4,378,537	14,015,099	5,665,496	97,829	13,055,741
Pittsburgh, Pa.	34	2,249,083	515,319	524,210	290,312	13,318	1,177,741
Portland, Me.	10	654,407	177,980	68,890	86,217	2,742	439,720
Pottsville, Pa.	4	248,893	70,921	25,532	11,616	942	200,724
Poughkeepsie, N. Y.	6	625,490	88,677	60,452	50,003	1,357	544,760
Providence, R. I.	21	1,151,253	274,609	284,257	139,279	3,631	773,707
Quincy, Ill.	7	658,364	180,506	47,143	64,334	6,261	388,726
Reading, Pa.	8	725,430	161,584	56,358	54,298	2,009	434,344
Richmond, Va.	16	1,266,702	341,913	105,536	100,164	11,823	644,773
Rochester, N. Y.	22	2,527,371	286,616	135,567	243,369	24,309	1,072,723
Saint Joseph, Mo.	7	843,775	87,323	72,119	47,305	8,927	728,620

* Two carriers appointed May 1, 1879.

† Established October 1, 1878.

system for the year ending June 30, 1879.

Collected.			Pieces handled.		Cost of service (including incidental expenses).			Postage on local matter.
Letters.	Postal cards.	Newspapers.	Aggregate.	Per carrier.	Aggregate.	Per piece.	Per carrier.	
1, 842, 932	378, 331	180, 225	5, 808, 081	218, 858	920, 585 86	3.45	9782 43	12
530, 702	128, 434	94, 616	3, 835, 978	297, 816	■ ■ ■ ■ ■	2.93	756 14	13
830, 876	211, 013	44, 012	2, 580, 055	432, 176	4, 584 14	1.76	764 02	14
7, 084, 392	1, 808, 679	340, 970	20, 023, 091	808, 852	87, 071 40	2.85	851 81	15
320, 443	96, 560	20, 374	972, 235	343, 050	3, 127 58	2.22	781 83	16
14, 343, 638	4, 088, 287	1, 083, 972	45, 000, 088	360, 876	139, 256 84	3.05	834 00	17
321, 902	100, 434	45, 937	1, 549, 632	256, 272	4, 611 54	2.97	768 50	18
4, 132, 129	1, 023, 159	587, 089	18, 578, 812	198, 772	77, 470 11	4.17	622 01	19
2, 844, 788	752, 748	346, 619	10, 508, 904	394, 247	20, 038 74	2.83	834 25	20
287, 847	130, 845	155, 875	1, 084, 644	322, 441	4, 487 44	2.34	742 91	21
287, 887	80, 343	87, 652	1, 798, 551	308, 425	4, 648 15	2.80	774 26	22
303, 561	124, 062	80, 174	1, 650, 584	188, 820	6, 087 07	2.90	767 24	23
23, 042, 115	6, 211, 788	8, 987, 780	89, 723, 144	420, 390	127, 000 07	1.98	845 68	24
8, 181, 900	1, 977, 176	588, 679	21, 841, 580	290, 422	63, 782 41	■ ■ ■	859 25	25
2, 835, 054	1, 115, 370	432, 249	12, 800, 548	303, 545	30, 603 62	■ ■ ■	900 11	26
767, 645	280, 423	74, 248	3, 656, 278	304, 880	2, 589 36	1.62	799 61	27
130, 580	24, 308	14, 022	773, 360	154, 678	3, 616 76	■ ■ ■	723 35	28
287, 133	109, 242	28, 554	1, 587, 474	108, 434	5, 937 52	3.74	743 28	29
788, 308	304, 442	331, 792	2, 782, 491	311, 040	9, 305 83	■ ■ ■	771 28	30
882, 487	289, 481	95, 401	3, 288, 838	318, 119	5, 486 04	2.46	788 72	31
1, 875, 002	477, 122	252, 389	11, 428, 725	368, 670	27, 348 06	2.36	882 19	32
498, 620	170, 920	44, 584	1, 808, 323	361, 065	2, 714 15	2.08	742 82	33
826, 507	265, 314	436, 722	3, 719, 576	619, 929	4, 582 82	1.28	763 82	34
216, 803	88, 443	37, 851	1, 308, 280	218, 047	4, 734 84	2.82	789 11	35
289, 182	80, 851	35, 303	1, 777, 052	253, 886	4, 988 64	2.80	778 11	36
378, 325	81, 628	28, 930	1, 678, 308	239, 758	5, 563 61	2.31	794 80	37
401, 329	154, 700	54, 808	2, 011, 001	287, 288	6, 393 07	2.76	798 87	38
173, 968	23, 249	30, 244	1, 107, 482	184, 580	3, 164 79	2.87	630 80	39
644, 871	108, 097	90, 950	2, 019, 180	374, 109	5, 445 00	2.77	777 90	40
677, 235	233, 394	74, 347	2, 061, 700	365, 212	6, 192 80	2.01	774 04	41
148, 501	58, 786	12, 435	1, 067, 871	177, 896	4, 498 07	4.21	749 68	42
676, 225	141, 316	90, 429	2, 143, 624	285, 775	8, 028 23	2.56	729 84	43
118, 215	50, 118	8, 314	865, 821	188, 455	2, 958 24	4.44	739 56	44
1, 786, 885	665, 633	258, 843	8, 068, 287	288, 152	21, 064 92	2.92	815 11	45
501, 514	175, 910	63, 871	2, 826, 453	157, 025	12, 588 37	4.45	899 35	46
1, 088, 008	349, 047	330, 839	5, 683, 343	510, 008	8, 896 19	1.58	808 65	47
202, 743	77, 603	27, 629	1, 056, 217	211, 262	8, 648 96	2.45	729 79	48
160, 791	49, 417	11, 878	1, 244, 624	248, 925	2, 809 02	■ ■ ■	761 80	49
747, 238	86, 457	64, 399	2, 371, 530	290, 441	6, 302 49	2.24	787 61	50
846, 514	85, 225	70, 517	1, 258, 301	250, 080	2, 678 75	2.98	725 75	51
2, 182, 080	729, 034	351, 634	9, 425, 420	314, 181	28, 609 19	2.82	817 27	52
496, 910	182, 148	49, 054	1, 848, 907	184, 900	7, 516 85	4.08	751 68	53
422, 817	151, 804	42, 462	1, 792, 617	256, 117	5, 714 11	2.19	816 20	54
258, 548	82, 034	34, 220	1, 636, 075	327, 215	2, 841 08	2.35	778 22	55
719, 084	163, 682	100, 189	3, 116, 427	239, 725	9, 839 78	2.15	756 91	56
1, 662, 444	707, 606	298, 276	8, 537, 070	328, 850	23, 636 58	2.70	916 79	57
625, 953	159, 000	86, 403	2, 381, 337	239, 134	8, 163 55	3.41	816 35	58
349, 296	71, 304	140, 086	1, 357, 801	226, 300	4, 004 14	2.95	867 36	59
477, 845	184, 750	89, 987	2, 243, 382	324, 338	7, 613 10	2.35	761 21	60
1, 116, 921	377, 835	123, 086	5, 774, 629	240, 806	20, 216 24	2.50	842 24	61
361, 900	83, 340	25, 495	1, 775, 239	253, 606	6, 580 30	3.14	797 19	62
731, 335	99, 106	91, 054	2, 801, 651	185, 097	11, 772 45	■ ■ ■	735 78	63
2, 314, 472	2, 093, 337	732, 013	8, 828, 249	187, 835	30, 520 29	4.48	848 85	64
98, 612, 350	19, 521, 740	11, 218, 264	224, 689, 132	510, 430	352, 233 56	1.57	800 63	65
592, 009	184, 699	52, 147	1, 912, 312	382, 402	3, 821 52	1.90	764 20	66
140, 843	25, 211	15, 938	648, 864	108, 144	2, 272 01	5.04	545 35	67
348, 218	184, 633	45, 613	2, 169, 026	364, 838	4, 604 19	2.10	787 26	68
281, 303	84, 533	33, 481	1, 231, 231	205, 205	4, 646 87	3.77	774 48	69
276, 954	52, 496	51, 782	1, 505, 821	215, 117	5, 651 78	2.75	807 39	70
458, 907	150, 157	81, 614	2, 014, 430	251, 805	6, 353 74	3.15	769 22	71
255, 522	86, 080	4, 052	1, 290, 601	258, 000	3, 886 14	3.01	777 23	72
32, 960, 094	7, 899, 106	8, 109, 621	107, 806, 586	426, 477	223, 954 19	2.07	865 19	73
1, 068, 877	502, 078	220, 461	7, 378, 608	217, 015	29, 262 36	2.97	861 24	74
813, 250	273, 635	182, 442	2, 865, 976	286, 506	7, 718 25	2.69	771 82	75
148, 901	55, 795	49, 717	941, 222	235, 305	3, 079 84	3.27	769 06	76
636, 479	133, 614	127, 592	2, 263, 821	377, 220	4, 618 70	2.04	789 78	77
737, 110	301, 806	70, 879	2, 535, 027	168, 863	16, 123 07	5.13	862 53	78
318, 500	114, 868	19, 532	1, 778, 125	254, 018	5, 689 79	3.14	796 54	79
336, 947	125, 200	32, 958	1, 929, 338	241, 167	6, 228 14	3.23	778 52	80
751, 948	292, 017	111, 290	2, 621, 080	227, 258	12, 633 83	2.82	753 99	81
1, 454, 579	230, 811	140, 279	4, 307, 043	286, 684	17, 268 42	2.74	784 70	82
628, 823	168, 879	84, 983	2, 481, 347	334, 478	5, 225 27	2.11	746 47	83

REPORT OF THE POSTMASTER-GENERAL.

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system for the year ending June 30, 1879—Continued.

Collected.			Pieces handled.		Cost of service (including incidental expenses).			Postage on local matter.
Letters.	Postal cards.	Newspapers.	Aggregate.	Per carrier.	Aggregate.	Per piece.	Per carrier.	
7,790,887	2,140,405	2,056,046	32,196,695	279,971	\$95,056 14	Mills.	\$826 57	\$46,650 48
781,820	263,127	103,859	3,754,388	875,439	7,512 10	2.00	751 31	3,639 44
274,206	81,170	72,447	1,818,111	219,685	4,419 47	3.85	736 58	1,544 30
6,510,732	1,067,387	1,016,426	17,153,548	343,071	49,313 50	2.87	986 27	47,535 27
490,180	128,574	67,005	1,632,616	272,103	4,491 78	2.75	748 63	3,016 56
195,140	69,467	41,631	1,356,310	271,262	3,869 99	2.85	774 00	1,287 64
276,139	125,266	52,820	1,723,837	215,480	6,031 11	2.80	753 89	3,402 88
1,060,982	371,976	155,400	5,242,077	827,629	11,829 64	2.26	789 85	6,716 45
1,278,070	320,044	210,561	4,623,990	390,285	11,507 91	2.50	821 99	4,906 78
296,855	76,529	52,399	1,323,558	220,593	4,297 32	3.25	716 22	2,154 17
1,472,389	314,867	267,796	5,187,176	345,815	11,433 81	2.20	822 25	6,500 34
852,706	253,263	87,439	3,249,019	270,751	9,468 55	2.91	789 04	3,090 07
2,027,642	390,467	389,194	8,671,334	197,076	36,449 10	4.20	828 89	17,674 89
521,950	166,913	58,756	1,915,119	319,186	4,684 02	2.44	780 67	1,708 74
802,407	104,608	24,848	1,718,903	171,890	7,575 10	4.40	757 51	2,825 04
414,445	129,296	53,707	2,085,928	189,630	8,639 28	4.14	785 39	5,332 75
253,174,241	62,130,798	39,862,632	809,854,065	339,065	1,942,261 15	2.40	823 34	2,812,523 86
letter-carriers from July 1, 1878					5,445 46			
.....					1,947,706 61			

Table showing the increase and decrease of post-offices in the several States and Territories; also the number of post-offices at which appointments are made by the President and by the Postmaster-General, for the year ended June 30, 1879.

States and Territories.	Whole number of post-offices in the United States June 30, 1878.	Whole number of post-offices in the United States June 30, 1879.	Increase.	Decrease.	Number of postmasters appointed by the President June 30, 1878.	Number of postmasters appointed by the President June 30, 1879.	Increase.	Decrease.	Number of postmasters appointed by the Postmaster-General June 30, 1878.	Number of postmasters appointed by the Postmaster-General June 30, 1879.	Increase.	Decrease.
Alabama.....	967	1,049	82		17	22	5		850	1,027	77	
Alaska.....	2	2							2	2		
Arizona.....	53	74	21		2	3	1		51	71	20	
Arkansas.....	750	824	74		8	8			743	828	85	
California.....	814	836	22		43	49	7		772	787	15	
Colorado.....	265	283	18		12	16	4		253	277	24	
Connecticut.....	440	444	4		45	49	4		395	395		
Dakota.....	206	279	73		4	6	2		202	273	71	
Delaware.....	106	107	1		4	6	2		102	101		1
District of Columbia.....	6	6			1	1			5	6		
Florida.....	271	306	35		7	7			264	299	35	
Georgia.....	898	965	67		21	23	2		877	942	65	
Idaho.....	92	92			2	3	1		90	89		1
Illinois.....	1,938	1,957	19		150	162	12		1,788	1,795	7	
Indiana.....	1,571	1,610	39		67	72	5		1,504	1,538	34	
Indian Territory.....	62	70	8						62	70	8	
Iowa.....	1,456	1,467	11		94	97	3		1,363	1,370	7	
Kansas.....	1,226	1,346	120		33	46	13		1,193	1,343	150	
Kentucky.....	1,259	1,288	29		27	28	1		1,212	1,258	46	
Louisiana.....	394	424	30		9	10	1		385	414	29	
Maine.....	914	921	7		26	31	5		888	890	2	
Maryland.....	640	664	24		12	13	1		628	651	23	
Massachusetts.....	729	745	16		103	108	5		636	637	1	
Michigan.....	1,292	1,325	33		71	81	10		1,221	1,244	23	
Minnesota.....	905	958	53		27	31	4		878	927	49	
Mississippi.....	621	662	41		16	20	4		605	642	37	
Missouri.....	1,606	1,646	40		42	49	7		1,554	1,597	43	
Montana.....	116	123	7		6	6			110	117	7	
Nebraska.....	630	692	62		17	23	6		622	669	47	
Nevada.....	97	115	18		10	11	1		87	104	17	
New Hampshire.....	449	477	28		25	24		1	424	429	5	
New Jersey.....	674	678	4		50	53	3		624	625	1	
New Mexico.....	96	102	6		1	1			95	101	6	
New York.....	2,869	2,920	51		174	186	12		2,695	2,734	39	
North Carolina.....	1,300	1,365	65		11	13	2		1,289	1,352	63	
Ohio.....	2,259	2,313	54		108	110	2		2,151	2,203	52	
Oregon.....	329	354	25		7	7			322	347	25	
Pennsylvania.....	3,290	3,333	43		125	130	5		3,165	3,203	38	
Rhode Island.....	109	110	1		11	11			98	99	1	
South Carolina.....	543	566	23		11	12	1		532	553	21	
Tennessee.....	1,238	1,316	78		17	16		1	1,224	1,300	76	
Texas.....	1,131	1,218	87		37	40	3		1,094	1,178	84	
Utah.....	1,190	198	8		3	4	1		187	194	7	
Vermont.....	493	494	1		19	21	2		474	473		1
Virginia.....	1,600	1,661	61		25	25			1,575	1,636	61	
Washington.....	171	200	29		3	3			168	197	29	
West Virginia.....	831	843	12		7	8	1		824	835	11	
Wisconsin.....	1,303	1,327	24		58	62	4		1,245	1,265	20	
Wyoming.....	65	60			3	3			52	57	5	
Total.....	39,258	40,855	1,597		1,570	1,711	143	2	37,679	39,144	1,465	3

REPORT OF THE SECOND ASSISTANT POSTMASTER-GENERAL.

POST-OFFICE DEPARTMENT,
OFFICE OF THE SECOND ASSISTANT POSTMASTER-GENERAL,
Washington, D. C., November 1, 1879.

SIR: At the close of the last fiscal year, June 30, 1879, the

ANNUAL COST OF INLAND TRANSPORTATION

was as follows, viz:

On 1,059 railroad routes, aggregating 79,991 miles in length.....	\$9,567,590
On 112 steamboat routes, aggregating 21,240 miles in length.....	754,388
On 9,225 other routes, designated as "star routes" aggregating 215,430 miles in length.....	6,401,830
Total cost.....	16,723,808

Compared with the state of the service at the close of the preceding year, the railroad routes show an increase of 59 routes in number, of 2,871 miles in aggregate length, and \$995 in annual cost. This small increase in cost is owing to the reduction in the rate of pay under act of June 17, 1878.

The steamboat routes show an increase in number of 6 routes, of 3,171 miles in aggregate length, whilst the increase in the annual cost is only \$1,095. This is owing, principally, to the mails being carried gratuitously on the route from Fernandina, Fla., to Brunswick, Ga., a distance of 40 miles, and from New Orleans, La., to Havana, Cuba, a distance of 832 miles.

The "star routes" show an increase of 414 in number, of 8,703 miles in aggregate length, and of \$686,887 in annual cost. Taken together, the increase in the number of routes was 479; in aggregate length, 14,745 miles; and in the annual cost \$689,787.

CONTRACTS.

Number of contracts drawn during the year ended June 30, 1879.....	8,000
Number of official and certified copies made during same period.....	200
Number redrawn on account of failures of contractors during same period.....	1,000
Total	9,200

RAILROAD SERVICE—ESTIMATE FOR 1881.

The cost of the transportation of mails by railroad for the fiscal year ended June 30, 1879, was at the rate of \$9,692,590.

The cost for the fiscal year ended June 30, 1878, was at the rate of \$9,566,595, the difference showing an increase for 1879 over 1878 of \$125,995. This increase, however, does not represent the actual rate of increase in the service, as account must be taken of the reduction of 5 per cent. in the rate of compensation from July 1, 1878, made under act of June 17, 1878. The amount of this deduction is, in round numbers, \$400,000, making, with the \$125,995, an increase of \$525,995 for 1879 over 1878, being a little less than 5.5 per cent.

In the explanation, in the last annual report, of the estimates for the current fiscal year, allusion was made to the probable improvement of the business of the country, and its effect upon postal affairs.

It is gratifying to be able now to point to the general prosperity as an existing fact, and no longer an element of uncertainty.

Therefore, without argument as to the necessity of providing a greater rate of increase for the transportation of mails by railroad for 1881, than the actual increase for 1877, 1878, and 1879, the cost for that year is set down at \$10,000,000, which is an increase of a little over 11.11 per cent. The appropriation for railway post-office car service for 1880 is \$1,250,000, and the increase for this *item* is placed at the lower rate of 8 per cent., because the system, as now in operation, covers the greater number of cases where the most pressing need exists for such service, including the establishment of the system in Southern States from July 1, 1879, so that there remains at present no general system to be provided for in the estimate for 1881. This item is therefore placed at \$1,350,000.

THE SPECIAL FUND FOR PROPER FACILITIES.

Upon the enforcement of the law requiring a reduction of 10 per cent. in the compensation for carrying the mails on railroad routes from July 1, 1876, it was found that the companies rendering the most important postal service to the public, were disposed to lessen the accommodations already provided, and withhold the facilities necessary to a proper and expeditious performance of the service.

To meet this, Congress, on the 3d March, 1877, appropriated \$150,000 to be used by the Postmaster-General to obtain proper facilities on the trunk lines. The compensation to railroads was further reduced 5 per cent. from July 1, 1878, and the same act continued the appropriation for proper facilities.

By the use of this fund the department has succeeded in preventing any injury to the postal service on the most important lines, and in several cases has secured the running of special trains of great value to the business interests of the sections interested. As the compensation to railroads remains at the rates prescribed by act of June 17, 1878, it is manifest, considering the present state of values, that it is necessary that a sufficient special fund be provided for the maintenance of proper facilities for the ensuing fiscal year.

DELIVERY OF MAILS BY RAILROAD COMPANIES FROM STATIONS TO POST-OFFICES.

In the report for 1878 the questions of compensation for service on short routes and the delivery of mails from stations to post-offices were presented as proper subjects for the consideration of Congress, and reference is again made to these questions, because they stand in the way of an equitable adjustment of the compensation to railroad companies for carrying the mails.

PAY FOR CARRYING THE MAILS ON RAILROAD ROUTES.

The act of March 3, 1879, provides, "That the Postmaster-General shall request all railroad companies transporting the mails to furnish, under seal, such data relating to the operating, receipts, and expenditures of such roads as may in his judgment be deemed necessary to enable him to ascertain the cost of mail transportation and the proper compensation to be paid for the same, and he shall in his annual report to

Congress make such recommendations, founded on **the information** obtained under this section, as shall in his opinion be **just and equitable.**"

In compliance with this requirement, a letter was addressed to the railroad companies asking the following information:

First. The average number and length in feet and inches of the passenger-coaches, including sleeping-cars, run daily, except **Sunday**, in each direction over your lines.

Second. The (average) number and length, in feet and inches, of the cars or apartments used for baggage run over the road in each direction daily, except Sunday.

Third. The number and length, in feet and inches, of the cars or apartments used for express matter run over the road in each direction daily, except Sunday.

Fourth. The amount received for the transportation of passengers and the cost of running passenger-coaches.

Fifth. The cost of running cars or apartments for baggage.

Sixth. The amount received for the conveyance of express matter and the cost of running the cars or apartments devoted to the use of the same.

Seventh. The actual expenditure for the conveyance of mail between stations and post-offices where the latter are not over 80 rods distant from the former.

Eighth. Make separate statements of Sunday trains.

It will be noticed that the department, ignoring the questions of cost of construction, &c., has endeavored to ascertain the average amount of space used for the passenger business and the receipts and expenses attributable to the same, and thus to arrive at the rates of cost and profit per linear foot per mile run resulting from the passenger traffic, and with the view of submitting the same to Congress, as furnishing a just and equitable basis upon which to fix the rates of pay for the space used for mails and agents.

The companies have not generally replied, and such replies as have been received have not been arranged, because the pressure of current business has been so great as to prevent their consideration.

AUSTRALIAN MAILS.

For several years a heavy British mail, destined for **Australia**, has been included with the United States mails, and carried from New York across the continent to San Francisco; by the carrying of which the cost of the transportation of mails to this department has been increased at the rate of about one hundred thousand dollars per annum. And, while this sum has been included in the appropriations for railroad transportation, and appears to be an expenditure on account of our own mails, yet, through the competent representation of the interests of this country at the International Postal Congress, the exceptional character of the service rendered by this government in carrying the **Australian** mails as herein explained, has been recognized, and the British Government has already paid into the United States Treasury the actual cost of doing the work, which to this time amounts to something over a quarter of a million dollars.

And, while this service does not appear as a credit to the item of railroad transportation, it is such in fact.

ADJUSTMENT OF RAILWAY PAY.

I again invite attention to the service performed by the division of "Railway Adjustment" in fixing the rates of pay for carrying the mails on nearly 80,000 miles of railroad, amounting to \$10,000,000 per annum, and covering every State in the Union, and conducting the correspondence incident thereto. The clerk in charge of this work receives \$1,800 per annum, while, in my opinion, the salary attached to the position should be not less than \$2,000 per annum, as "Superintendent of Railway Adjustment."

THE CHIEF CLERK.

The chief clerk of the contract office occupies a position which requires a superior order of executive ability, and involves great responsibility, as he is in fact deputy assistant postmaster-general, and is frequently and necessarily charged with the entire conduct of the affairs of the contract office. The salary attached to the position for twenty years has been \$2,000 per annum, which is considerably less than is paid to some of the chiefs of divisions of this department. And I have recommended that this salary be increased to \$2,500 per annum, which is less than the salaries fixed for similar positions in the Treasury Department and elsewhere.

STAR SERVICE.

Upon the application and recommendation of members of Congress, Army and other public officers, and State officers and citizens interested, the star service has been largely increased during the past year; and this action is justified by the large increase in the volume of mail-matter carried in consequence of the increased facilities for transportation, and the enlargement of the matter recently declared to be mailable, and the superior arrangements for its safety in transit.

DEFECTS IN PRESENT LAWS.

I desire to call particular attention to the existing laws, which have been in force many years, under which orders for increased frequency and increased speed are necessarily made. The section relating to increase of service is as follows, viz: "Compensation for additional service in carrying the mail shall not be in excess of the exact proportion which the original compensation bears to the original service, and when any such additional service is ordered the sum to be allowed therefor shall be expressed in the order and entered upon the books of the department; and no compensation shall be paid for additional regular service rendered before the issuing of such order."

That relating to allowance for increased celerity is as follows, viz: "No extra allowance shall be made for any increase of expedition in carrying the mail unless thereby the employment of additional stock and carriers is made necessary, and in such case the additional compensation shall bear no greater proportion to the additional stock and carriers necessarily employed than the compensation in the original contract bears to the stock and carriers necessarily employed in its execution."

It is frequently the case in regions comparatively new that service is not required at the time of advertising more frequently than once or twice a week, and after the contract is entered into and the service is

put in operation population centers along the line of the route, and more frequent service becomes a necessity. Under such circumstances it is clear that the rate that was reasonable for once or twice a week service through a sparsely settled region becomes a very unreasonable basis upon which to increase the service when the circumstances under which it is to be performed are entirely changed. I would therefore recommend that section 3960 be amended by adding after the semicolon following the word department the words "and the Postmaster-General may in his discretion relet the service by advertising for proposals for thirty days in the newspapers at the termini of the route, or if there be none published at those points, then in others in circulation in the region to be supplied with the mails; the service to be awarded to the lowest responsible bidder, as usual."

Under section 3961 allowances for increased speed are based upon the sworn statements of contractors showing the additional stock and carriers required. This practically makes a man and a horse of equal value as factors in determining the rate of increased compensation to be allowed. I would, therefore, recommend that allowance for increased speed be based upon the proportion the cost of performing the original service bears to the cost of the service at the increased speed; and that such additional allowances shall in no case be greater than 50 per centum of the original cost of the service. In case the cost of increased speed would amount to more than 50 per centum of the cost of the original service, the Postmaster-General shall readvertise for service with the increased speed; or, in his discretion, he may advertise in any case where increased speed is necessary. The advertisement to be inserted for not less than thirty days in newspapers published at the termini of the route, or in those published elsewhere having circulation along the line of the route, the contract to be awarded to the lowest responsible bidder, as usual.

This will accomplish, with but little delay, the desired improvement in the service, and with, I think, great advantage to the government.

INCREASE IN STAR SERVICE.

The estimates for the next fiscal year are made with a view to provide for the continuance of the present efficient service, and to afford largely increased service in the States of Indiana, Ohio, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Mississippi, and Alabama, which has already been advertised to go into effect July 1, 1880, and which will improve the present mail facilities.

The reason for advertising for the improved service is that it can be obtained at much less cost by so doing.

DEFICIENCIES.

Despite my effort to keep the cost of each item of inland transportation within each respective appropriation, there is an overexpenditure in the item of star transportation for the year ended June 30, 1879, of about \$150,000, while there is a surplus in the appropriation for steamboat and railroad service amounting to about 250,000 dollars, so that the aggregate expenditures for transportation do not exceed the amount appropriated for "Inland mail transportation."

FAST MAIL TO HAVANA.

For several years there has been a growing demand, especially in commercial circles, for a fast-mail service to Havana, via Cedar Keys and Key West, and for improved mail connection with Mexican and South American ports, and last year an earnest effort was made to put the service into operation to Havana.

The effort failed, however, in consequence of the inadequacy of the compensation allowable for the proposed service under existing laws.

The enactment of a law authorizing the Postmaster-General to contract for service between such ports of the countries mentioned as will, in his judgment, be calculated to advance the interests of the people of the United States, at a sufficient rate of pay per mile per annum, will enable the department to put the desired service into operation.

MAIL-BAGS, MAIL-CATCHERS, ETC.

To supply the current wants of the mail-service during the year there were distributed, by the issuance of 5,708 drafts on the various depositories, 530,559 mail-bags, of which 88,194 were locked pouches and 442,365 were canvas mail-sacks; being, altogether, 42,080 in excess of the number distributed during the previous year. There were also distributed by drafts 301 mail-catchers. There were issued directly from this division, with instructions, 41,603 mail-locks, 3,861 mail-keys, 500 safety key-chains, 5,343 mail-bag label-cases, 2,002 brass registered mail-tags, and 12,000 mail-bag label-hooks.

It will be seen, by reference to the accompanying table (G), prepared for the appendix to the Postmaster-General's annual report, that the total number of new mail-bags purchased under contracts and put into service during the year was 104,021, of which 14,021 were locked pouches for first-class matter and 90,000 were canvas mail-sacks for printed and miscellaneous mail-matter; being, altogether, an increase, compared with the previous year, of 24,123 mail-bags; that the number of mail-catchers was 300; and that the total expense of mail-bags and mail-catchers, including repairs, &c., was \$170,266.26. The average annual cost of the last three preceding years was \$171,588.10.

The total number of mail-bags repaired during the year was 356,527, and the total cost of their repairs was \$37,613.10. Prior to the existing system of repairing mail-bags, the same repairs would have cost \$80,338.29; showing a saving of \$42,725.19 during the year by the present improved system of having such work done. In the last four years, since the old system was abolished, the present system of repairs has effected a total saving of \$192,282.06.

The total expense of mail-locks and keys during the year ended June 30, 1879, was \$12,780.55; the average annual cost for the last three preceding years having been \$12,021.66.

The accompanying table (H), prepared for the appendix to the Postmaster-General's annual report, exhibits an abstract of all contracts in operation during the year ended 30th June last for mail-bags, mail-catchers, mail-bag label-cases, and mail-bag tags.

The term of all contracts for mail-locks and keys expired during the preceding year. Supplies of such have since been kept up temporarily by repairs and small purchases, made provisionally from the late contractors, as shown in detail by the table (G), before referred to.

The greater portion of the mail-locks now in use are nearly worn-out,

and are becoming insecure from their long subjection to the peculiarly hard usage of the mail-service. They were procured under contracts made in 1870, and will have soon fulfilled their allotted term of usefulness; ten years' service, as experience has hitherto shown, being the limit of duration for mail-locks, beyond which their further use is not reliable for requisite security. In the present state of the arts, it is probable locks of a new kind and different construction from the present mail-locks may be made to last longer, but it is not a property of the locks constructed and made up to the date when these were contracted for. Besides, the mail-locks and keys used on the general and the through mails, and above referred to as having been long in use, the particular kind of locks and keys now used to secure, in transit, the through-registered mails (now the chief medium of transmitting valuable mail-matter between large cities), though not so long in service as the other mail-locks, are now no longer adapted to the present enlarged and growing system of through-registered mails, which demands a new, different, and peculiar kind of locks, affording better security and greater facilities for dispatching mails of that highly important character.

It would be neither expedient nor practicable to replace the old locks now in service, to the extent which will soon be requisite, with new locks of the same kind or pattern; nor would it be practicable, without detriment to the service, to displace the old kinds of mail-locks and keys by small supplies of new kinds, introduced gradually. Consequently, it is expedient that a precedent supply of new kinds of locks and keys, equal in quantity to those in use, be contracted for, manufactured, and be in readiness for distribution, in order to substitute properly one kind for another.

The substitution for the present mail locks and keys of new locks and keys of entirely different construction, and unlike any others hitherto used or known in any way to impair their utility as mail locks and keys, is, in my judgment, a necessity of the service, to be provided for without any delay beyond the ensuing session of Congress. For, if during that session authority of law be given by the requisite appropriations for new kinds of mail locks and keys, probably no contract for them could be made to take effect until July 1, 1880, and one year or perhaps eighteen months therefrom would be required to manufacture, deliver, inspect, and have ready for distribution to all the postmasters in the United States; and adding thereto the time which must necessarily be consumed in distribution and substitution, the old locks and keys could not be superseded until some time in 1882 or 1883. And it is believed the old locks will not be reliable for the safety of the mails beyond that time.

FINES AND DEDUCTIONS.

The amount of fines imposed upon contractors and deductions made from their pay, for failures and other delinquencies for the fiscal year ended June 30, 1879, was \$177,098.57, and the amount remitted for the same period was \$16,571.76, leaving the net amount of fines and deductions \$160,526.81.

I have the honor to be, very respectfully, your obedient servant,

THOS. J. BRADY,
Second Assistant Postmaster-General.

Hon. DAVID M. KEY,
Postmaster-General.

POST-OFFICE DEPARTMENT,
OFFICE OF THE SECOND ASSISTANT POSTMASTER-GENERAL,
Washington, D. C., November 1, 1879.

SIR: For a statement of the mail-service for the contract year ended June 30, 1879, &c., I have the honor to refer you to the tables hereto annexed.

Table A exhibits the character of the service, the length of routes, the number of miles of transportation, and the cost thereof, at the close of the year.

Table B exhibits the railroad service as in operation on the 30th of June, 1879; also the cost per mile per annum in each State and Territory.

Table C exhibits the steamboat service, as in operation on the 30th of June, 1879.

Table D shows the increase and decrease of mail transportation, and cost in the several States and Territories, during the year ended June 30, 1879.

Table E shows the weight of the mails, the speed with which they are conveyed, the accommodations for mails and agents, the trips per week, and the rates of pay per mile per annum, on railroad routes in States in which the contract term expired June 30, 1879, and also in other States and Territories; the returns having been obtained with a view to the readjustment of pay in accordance with the act of March 3, 1873, and used also in accordance with the acts of July 12, 1876, and of June 17, 1878, in the case of readjustments taking effect on and after July 1, 1876. This table is accompanied with an alphabetical index of the titles of the companies carrying the mails.

Table F shows the readjustment of the rates of pay per mile on railroad routes in States and Territories in which the contract term expired June 30, 1879, and also in other States and on certain new routes; the adjustment of the rates based on returns of the weight of the mails, the speed with which they are conveyed, the accommodations for mails and agents, and the number of trips per week, in accordance with the act of March 3, 1873, and with the acts of July 12, 1876, and of June 17, 1878, in the case of readjustments taking effect on and after July 1, 1876. This table also is accompanied with an alphabetical index of the titles of the companies carrying the mails.

Table G is a statement of the number, description, and prices of mail-bags, mail-catchers, mail locks and keys purchased, and of the expense incurred on account thereof, during the fiscal year ended June 30, 1879.

Table H is a statement of all contracts in operation on the 30th of June, 1879, for mail-bags, mail-catchers, &c.

Table I is a list of railway post-office lines in the United States June 30, 1879, showing the increase and decrease in the service since June 30, 1878.

Table K is a consolidated statement, as given in tables K and L of my report of June 30, 1878, showing in detail the railway-mail service in operation on June 30, 1879.

Very respectfully, your obedient servant,

THOS. J. BRADY,
Second Assistant Postmaster-General.

Hon. DAVID M. KEY,
Postmaster-General.

Kansas.....	12,734	9,890	169,099	.....	2,835	238,987	2,000,750	.....	2,247,711	5,317,451	428,650
Nevada.....	2,573	2,432	182,822	.....	2,143	9,599	1,014,886	.....	89,314	1,104,230	102,421
California.....	11,635	7,438	488,853	1,740	2,737	431,969	2,838,373	307,918	1,950,103	5,126,390	912,322
Oregon.....	4,837	3,885	169,877	218	274	22,944	1,067,563	130,632	170,907	1,374,503	204,998
Colorado.....	4,670	3,907	291,655	.....	763	50,410	1,527,770	.....	603,871	2,031,641	341,405
Washington Territory.....	2,909	1,165	37,316	1,472	172	10,147	287,144	130,786	107,278	525,208	102,792
Idaho Territory.....	2,457	2,457	154,042	.....	.....	.....	890,776	.....	.....	890,776	154,042
Montana Territory.....	2,328	2,328	138,327	.....	.....	.....	922,856	.....	.....	922,856	138,327
Dakota Territory.....	3,898	8,836	168,173	.....	62	4,221	1,202,145	.....	38,667	1,240,812	172,394
Wyoming Territory.....	1,406	1,406	134,328	.....	.....	.....	622,637	.....	.....	622,637	134,328
Utah Territory.....	2,765	2,492	224,019	.....	273	21,116	1,283,445	.....	178,745	1,462,190	245,132
Indian Territory.....	2,590	2,590	140,451	.....	.....	.....	886,008	.....	.....	886,008	140,451
New Mexico Territory.....	2,634	2,034	223,829	.....	.....	.....	837,871	.....	.....	837,871	223,829
Arizona Territory.....	2,302	2,802	190,407	.....	.....	.....	776,843	.....	.....	776,843	190,407
Total.....	310,711	215,480	6,401,830	21,240	79,991	9,567,590	69,246,839	5,091,474	93,092,092	107,432,805	16,722,808
Railway post-office clerks.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,372,200
Route agents.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,072,420
Mail-route messengers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	167,640
Local agents.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	112,531
Mail-messengers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	684,174
Aggregate.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,012,872

THOS. J. BRADY,
Second Assistant Postmaster-General.

REPORT OF THE SUPERINTENDENT OF RAILWAY SERVICE.

POST-OFFICE DEPARTMENT,
OFFICE GENERAL SUPERINTENDENT
RAILWAY MAIL SERVICE
Washington, D. C., November 1

SIR: The appropriation for

RAILWAY POST-OFFICE CLERKS

the fiscal year ending June 30, 1880, is \$1,350,000. From the tables accompanying these estimates the increase in the force and expenditures for the various years will also the large increase in the mails now passing over the roads, and the large increase in the proportion of the same handled by postal cars.

The registration of third-class mail has largely increased the postal cars, and, in my opinion, there should be placed on each great through post-office line clerks whose only duty should be to receive, receipt for, and take sole charge of the registered mail. The mail-matter is growing rapidly and it is an important part of the service. The value and importance of this mail demand that on each great line one clerk should be assigned to its care and safety. It is not enough to require a clerk to do full distribution, then impose on him the further duty of taking the charge and responsibility of the registered mail, where he must receipt for each package, enter it in his book, and obtain in turn a receipt for it; this is no small amount of work, and say nothing of the great responsibility.

I desire to call attention to the fact that the railway post-office service is now being performed on the following lines: from Danville, Va., to New Orleans, La. (double daily); Peoria, Ill., to Savannah, Ga. (double daily); Savannah, Ga., to Jacksonville, Fla. (single daily); Kansas City, Mo., to Pueblo, Colo. (single daily); St. Louis, Mo., to Texarkana, Texas (single daily); and Chicago, Ill., to St. Louis, Mo. (single daily), are only provided for by post-office agents to perform the railway post-office service on the great lines. So long as the four classes of employees are retained, an appropriation should be made so that it will not be necessary to employ post-office agents exclusively to railway post-office work.

When the estimates for the present fiscal year were made, the railway post-office service on the great lines, excepting the Saint Louis and Texarkana railway post-office, were not in operation, consequently no provision was made for an appropriation for this additional service, yet it was thought proper to establish the service at that time on the best footing possible, and bring the matter to the attention of Congress.

Railway post-office clerks were not appointed on these lines. The post-office agents that were on the lines at the time of the establishment of the railway post-office service were retained as such, and a few clerks were appointed; at the same time there is still a lack of force to perform the necessary requirements of the service.

I desire also to call attention to the fact that there have been no promotions made during the past fiscal year, nor can there be any without an appropriation for this fiscal year. There are a great many worthy, competent, and deserving men that should be promoted.

and I would therefore, in view of these facts, respectfully recommend that you ask for an appropriation of \$1,450,000 for the fiscal year ending June 30, 1881.

ROUTE-AGENTS.

The appropriation for route-agents for the fiscal year ending June 30, 1880, is \$1,125,000. Section 4024 of the Revised Statutes provides that the Postmaster-General may employ route-agents at a salary of not less than nine hundred nor more than twelve hundred dollars per annum. Heretofore the pay of these agents has been graded according to the average number of miles run daily, but during the past year it became an absolute necessity to reduce nearly all of them to the minimum under the law, to prevent there being a deficiency in the appropriation. This reduction was a great injustice to the route-agents, many of whom are assigned to duty on railway post-office lines to perform the way or local work, and quite a number actually perform or make the same distribution as railway post-office clerks. It was also great injustice to the agents that run on the larger route-agent lines, where there is a large amount of work to perform. These agents are required to, and cheerfully perform their work in such a manner that all way and through connections are made, thus giving the mail practically the same rapidity in transit as a passenger could attain.

There is a growing need and a pressing demand for double daily route-agent service on the more important lines of that class. Having given this matter mature consideration, I have to respectfully recommend that you ask for an appropriation of \$1,225,000 for the fiscal year ending June 30, 1881.

MAIL-ROUTE MESSENGERS.

The appropriation for mail-route messengers for the present fiscal year is \$175,000. This amount is not sufficient to meet the demands of the service. Railroads are being built in all parts of the country, and the mileage is increasing more rapidly than was anticipated, and in view of the increasing prosperity of the country will doubtless continue to gain in a much larger ratio in the immediate future.

Where there is a railroad in operation the public very properly demand that it shall have the benefits of an agent upon it, if not more than thirty or forty miles in length. Railroad service without an agent is not as good for the general public on its line as star service. The first agents appointed on a new road are almost invariably mail-route messengers, which increases the demands on this appropriation. It is respectfully recommended that you ask for an appropriation of \$200,000 for the fiscal year ending June 30, 1881.

LOCAL MAIL-AGENTS.

The appropriation for local mail-agents for the present fiscal year is \$120,000. There is great need for an increase in this appropriation. These agents are now required to receipt for and transfer registered mail in addition to their other duties, which greatly increases their work, and requires them to assume a heavy responsibility, for which a large percentage of them do not receive an adequate remuneration for the labor performed. There are many railroad junctions which the good of the service demands should be provided with local agents.

There is no branch of the service more important than this, yet its merits have in a measure been overlooked. It neutralizes the good effects of close distribution if the transfers are not made at railroad

unctions promptly and with dispatch, and there is no certain his will be done unless there is some one to attend to it who responsible to the department. If the transfer is intrusted to employes it very frequently happens that the connection is missing to them a secondary consideration, and for the performance which they think they receive no pecuniary compensation.

I have carefully examined the requirements of this service, and respectfully recommend that you ask for an appropriation of \$150,000 for the fiscal year ending June 30, 1881.

SALARIES OF EMPLOYÉS OF THE RAILWAY MAIL SERVICE

I desire to call attention to my predecessor's last annual report on this subject. Experience has taught me that his recommendation is a good one, and I fully indorse and earnestly recommend its adoption.

"In my last annual report I called attention to the present salaries of the employes of this service.

"If this salary represented the net amount received by these employes it might then be considered fair; but it does not; for out of their salary some have to pay their expenses when absent from home attending to their duties. In this expense there is no uniformity. His absence and consequently his expense depend on the importance of the route, the length of the run, the schedule, &c. The more important and heavier the route, the work, the longer time the employe has to absent himself, and the more opportunity he has to take advantage of any little circumstance which would inure to his pecuniary benefit. The more he has the interest in the service at heart, the greater the sacrifice he is called upon to make for its benefit.

"In fact, the success and growth of this service and the efficiency it has attained have been secured almost entirely by the efforts of those holding subordinate positions, who have, with comparatively small salaries, devoted their time and energies to it, changing from one position to another as their services were demanded, filling in where the deficiencies of the service required regardless of the sacrifices they were called upon to make, and which could not be compensated for except by occasional promotion as it has been possible to make. While some have received their hard-earned and merited promotion, there are still many who cannot, under the present organization, have their services properly recognized.

"In the present organization, one general superintendent, two assistant superintendents, and nine division superintendents are expected to keep the system in perfect running order on 95,000 miles of railroad and boat routes, over which there is performed nearly 100,000,000 miles of annual service, superintend and regulate the workings of 2,605 employes on these routes, regulate and correct the distribution at all points. How this has been done can best be judged from the report of the division superintendents showing the distribution of the mails and the errors made.

"In this connection, it should be remembered that at least twice a year there is a general change in the railroad schedules, and many important ones each month, all of which must be anticipated, and the effect of each on the forwarding of the mails provided for.

"CHIEF HEAD CLERKS.

"After all these changes in distribution and other information has been tabulated and put in convenient form for reference by the employes.

the line, it has been necessary to detail employes to examine the clerks, to see that they keep informed of all these changes, and that the duty assigned to them is properly performed; in other words, to superintend the work on each particular route or group of routes. To do this, it is necessary that he travel constantly, and for this the utmost that can be paid is \$1,400 per annum, out of which all his traveling-expenses must come. It does seem that to provide for this, a grade of officers, to be styled chief head clerks, should be established, with pay not to exceed \$1,400 per annum and actual traveling-expenses not exceeding \$3 per day.

“CLASSIFICATION.

“The question of a change in the classification was discussed last year.

“Now that the service is brought under one general management, and each employe is required to work under the same general instructions and schemes, the only distinction in fact being the quantity of work, it seems that distinctions obsolete in practice should be abandoned. The clerks could be more uniformly graded, avoiding the dissatisfaction that now arises from the distinction in designation and pay where there is none in the work. It would, therefore, be better for the service, and prove more economical, should the appropriation be made in gross for these five classes, designating them as postal clerks, and allowing, say, five classes,” whose salaries shall not exceed the following rates per annum: First class, \$800; second class, \$900; third class, \$1,000; fourth class, \$1,200, and fifth class, \$1,400. If this recommendation is adopted the first, second, and third classes would be employed on the lighter and shorter lines. The fourth and fifth classes where railway post-office cars are required. The reclassification and making the appropriation in gross will in no way increase the expenditure. In the event of the adoption by Congress of this classification, the appropriation for railway postal clerks should be \$3,025,000.

The accompanying Tables A and B are an exhibit of the increase and decrease of this branch of the postal service.

TABLE A.—Statement for the years 1870 to 1879, inclusive, showing the number of railway post-office clerks, route-agents, mail-route messengers, and local agents employed, amount of annual compensation to each class, and the percentage of increase and decrease in number and annual compensation.

Year.	Number of railway post-office clerks in service at end of each fiscal year.	Increase in railway post-office clerks.	Annual compensation.	Increase of annual compensation.	Decrease of annual compensation.	Increase per cent. of annual compensation.	Decrease per cent. of annual compensation.	Number of route-agents in service at end of each fiscal year.	Increase in route-agents.	Decrease in route-agents.	Increase per cent. agents.	Decrease in local mail-agents.	Increase in local mail-agents.	Number of local mail-agents in service at end of each fiscal year.	Decrease, per cent.	Decrease of local mail-agents.	Increase, per cent.	Annual compensation.	Increase of annual compensation.	Decrease of annual compensation.	Decrease of annual compensation.	Increase, per cent.	Decrease, per cent.	Annual compensation.	Increase of annual compensation.	Decrease of annual compensation.	Increase, per cent.	Decrease, per cent.	Number of mail-route messengers in service at end of each fiscal year.	Increase per cent. in annual compensation.	Decrease per cent. in annual compensation.	Number of mail-route messengers in service at end of each fiscal year.
1870.	375	138	\$442,000 00	\$206,800 00		46.72		587	97		16.52			587					\$574,600 00	\$308,680 00					\$574,600 00	\$308,680 00			79	10.83		
1871.	513	138	649,400 00	220,000 00		28.53		684	80		11.09			684					671,200 00	60,540 00					671,200 00	60,540 00			103	0.91		
1872.	642	120	821,600 00	172,200 00		21.86		764	80		12.83			764					737,820 00	90,420 00					737,820 00	90,420 00			140	8.26		
1873.	732	110	941,000 00	10,400 00		12.45		802	96		8.58			802					828,240 00	90,420 00					828,240 00	90,420 00			171	4.89		
1874.	830	98	1,058,200 00	117,200 00		9.96		905	74		5.45			905					896,680 00	68,440 00					896,680 00	68,440 00			211	2.07		
1875.	901	51	1,163,600 16	105,400 16		5.16		967	51		2.95			967					896,390 52		\$289.48				896,390 52				225	3.55		
1876.	1,042	141	1,223,700 41	60,150 03	\$180.70	1.20		1,017	30		4.72			1,017					940,151 97	43,761 45					940,151 97	43,761 45			248	4.23		
1877.	1,051	9	1,223,550 41			8.33		1,065	48		7.32			1,065					950,020 86	19,508 89					950,020 86	19,508 89			248			
1878.	1,081	30	1,238,292 71	14,723 30		1.20		1,143	78					1,143					930,811 51	34,150 05					930,811 51	34,150 05			241			
1879.	1,091	10	1,341,304 14	103,101 43		8.33		1,133		10				1,133					1,035,801 01	42,050 40					1,035,801 01	42,050 40			247			

TABLE B.—Statement for the years 1870 to 1879 inclusive of steamboat and railroad routes, miles of annual service on the same, also miles of railway post-office service and miles of annual service thereon, together with the increase and decrease per cent.

Year.	Miles of steamboat route.	Increase of miles of steamboat routes.	Decrease of miles of steamboat routes.	Increase, per cent.	Decrease, per cent.	Miles of annual service on steamboat routes.	Increase in miles of annual service on steamboat routes.	Decrease in miles of annual service on steamboat routes.	Increase, per cent.	Decrease, per cent.	Miles of annual service on railroad routes.	Increase in miles of annual service on railroad routes.	Decrease in miles of annual service on railroad routes.	Increase, per cent.	Decrease, per cent.	Decrease in miles of annual service on railroad routes.	Increase in miles of annual service on railroad routes.	Decrease in miles of annual service on railroad routes.	Increase, per cent.	Decrease, per cent.
1870.	20,695	4,122,385	562,393	1.74	13.64	43,727	49,824	4,107	13.06	47,551,870	55,557,048	8,005,178	10.88	10.88	47,551,870	55,557,048	8,005,178	10.88	10.88	
1871.	20,334	4,631,778	376,342	7.25	8.03	57,911	57,911	0	16.21	62,491,749	62,491,749	0	16.21	12.48	62,491,749	62,491,749	0	16.21	12.48	
1872.	18,860	4,308,436	360,651	11.12	8.37	63,457	63,457	0	9.74	66,621,445	66,621,445	0	9.74	5.01	66,621,445	66,621,445	0	9.74	5.01	
1873.	16,763	3,947,785	130,940	11.17	3.32	67,724	67,724	0	9.74	72,490,545	72,490,545	0	9.74	10.42	72,490,545	72,490,545	0	9.74	10.42	
1874.	18,624	4,078,725	110,873	15.27	2.94	70,083	70,083	0	2.47	75,154,910	75,154,910	0	2.47	8.44	75,154,910	75,154,910	0	2.47	8.44	
1875.	18,763	3,958,852	254,819	5.73	9.01	72,848	72,848	0	2.23	85,353,710	85,353,710	0	2.23	3.44	85,353,710	85,353,710	0	2.23	3.44	
1876.	14,883	3,704,523	333,705	18.33	14.63	74,546	74,546	0	2.45	92,130,365	92,130,365	0	2.45	9.80	92,130,365	92,130,365	0	2.45	9.80	
1877.	17,682	4,038,238	501,080	2.18	14.63	77,119	77,119	0	2.45	98,062,862	98,062,862	0	2.45	7.92	98,062,862	98,062,862	0	2.45	7.92	
1878.	18,072	4,639,298	462,178	17.53	9.86	79,091	79,091	0	2.72	98,062,862	98,062,862	0	2.72	1.06	98,062,862	98,062,862	0	2.72	1.06	
1879.	21,240	5,061,474	462,178	17.53	9.86	79,091	79,091	0	2.72	98,062,862	98,062,862	0	2.72	1.06	98,062,862	98,062,862	0	2.72	1.06	

Year.	Miles of railway post-office service.	Increase of miles of railway post-office service.	Decrease of miles of railway post-office service.	Increase, per cent.	Decrease, per cent.	Miles of annual service by railway post-office.	Increase of miles of annual service by railway post-office.	Decrease of miles of annual service by railway post-office.	Increase, per cent.	Decrease, per cent.	Total miles of railroad and steamboat routes.	Increase of miles of railroad and steamboat routes.	Decrease of miles of railroad and steamboat routes.	Increase, per cent.	Decrease, per cent.	Miles of annual service on railroad and steamboat routes.	Increase of miles of annual service on railroad and steamboat routes.	Decrease of miles of annual service on railroad and steamboat routes.	Increase, per cent.	Decrease, per cent.
1870.	8,253	2,056	3,572,540	35.82	54.96	64,423	70,188	5,766	8.93	60,241,828	51,674,355	8,567,473	16.58	16.58	51,674,355	50,241,828	1,432,527	2.73	2.73	
1871.	11,207	2,999	2,224,310	26.95	12.06	70,771	70,771	0	0.41	60,800,135	60,800,135	0	0.41	10.80	60,800,135	60,800,135	0	0.41	10.80	
1872.	14,117	7,940	450,775	5.30	8.86	60,219	60,219	0	4.49	60,500,220	60,500,220	0	4.49	4.14	60,500,220	60,500,220	0	4.49	4.14	
1873.	14,868	7,940	1,500,010	10.41	12.59	60,219	60,219	0	7.66	70,530,270	70,530,270	0	7.66	10.02	70,530,270	70,530,270	0	7.66	10.02	
1874.	16,414	1,548	332,150	8.16	2.82	85,871	85,871	0	1.58	70,113,762	70,113,762	0	1.58	8.80	70,113,762	70,113,762	0	1.58	8.80	
1875.	16,622	518	570,130	4.61	8.80	87,231	87,231	1,360	1.58	81,445,705	81,445,705	0	1.58	2.95	81,445,705	81,445,705	0	1.58	2.95	
1876.	17,713	781	1,715,135	0.27	11.27	92,231	92,231	5,000	5.78	86,306,948	86,306,948	0	5.78	9.76	86,306,948	86,306,948	0	5.78	9.76	
1877.	17,761	48	1,008,800	781	5.86	95,181	95,181	2,860	3.21	96,749,683	96,749,683	0	3.21	8.23	96,749,683	96,749,683	0	3.21	8.23	
1878.	16,980	360	17,868,210	2.13	65.700	101,231	101,231	6,040	6.54	98,184,066	98,184,066	0	6.54	1.48	98,184,066	98,184,066	0	6.54	1.48	
1879.	17,340	360	17,868,210	2.13	65.700	101,231	101,231	6,040	6.54	98,184,066	98,184,066	0	6.54	1.48	98,184,066	98,184,066	0	6.54	1.48	

Year.	Miles of route on which there is railway post-office service.	Increase of miles of route service.	Decrease of miles of route service.	Increase, per cent.	Decrease, per cent.	Miles of annual service by railway post-office.	Increase of miles of annual service by railway post-office.	Decrease of miles of annual service by railway post-office.	Increase, per cent.	Decrease, per cent.	Total miles of railroad and steamboat routes.	Increase of miles of railroad and steamboat routes.	Decrease of miles of railroad and steamboat routes.	Increase, per cent.	Decrease, per cent.	Miles of annual service on railroad and steamboat routes.	Increase of miles of annual service on railroad and steamboat routes.	Decrease of miles of annual service on railroad and steamboat routes.	Increase, per cent.	Decrease, per cent.
1870.	8,253	2,056	2,056	35.82	54.98	6,500,000	3,572,540	64,423	10.07	64,423	64,423	0	0	8.92	51,674,355	60,241,828	8,567,473	16.58	16.58	
1871.	11,208	2,999	2,999	35.85	42.06	10,072,540	2,224,310	70,171	12.06	70,171	70,171	0	0	9.41	60,800,165	60,800,165	0	10.80	10.80	
1872.	14,117	2,999	2,999	35.85	42.06	12,208,850	450,776	80,219	3.66	80,219	80,219	0	0	4.49	60,500,220	60,500,220	0	4.14	4.14	
1873.	14,866	749	749	5.30	12.39	12,747,025	1,560,010	84,268	12.39	84,268	84,268	0	0	7.66	70,530,270	70,530,270	0	10.02	10.02	
1874.	16,414	1,548	1,548	10.41	2.82	14,267,635	332,150	85,871	2.82	85,871	85,871	0	0	1.58	79,113,762	79,113,762	0	8.86	8.86	
1875.	16,922	518	518	2.16	2.89	14,630,795	570,139	87,221	2.89	87,221	87,221	0	0	2.95	81,445,705	81,445,705	0	2.95	2.95	
1876.	17,713	781	781	4.61	11.27	15,206,915	1,715,135	92,231	3.89	92,231	92,231	0	0	5.73	86,386,948	86,386,948	0	9.76	9.76	
1877.	17,761	48	48	0.27	5.96	16,925,050	1,008,800	95,191	11.27	95,191	95,191	0	0	8.21	90,749,632	90,749,632	0	8.21	8.21	
1878.	16,960	360	360	4.39	60.87	17,933,910	1,008,800	101,221	5.96	101,221	101,221	0	0	1.46	96,749,632	96,749,632	0	1.46	1.46	
1879.	17,340	360	360	2.12	60.87	17,968,210	1,008,800	101,221	2.12	101,221	101,221	0	0	6.54	96,749,632	96,749,632	0	6.54	6.54	

The increase in the miles of railroad routes in operation June 30, 1879, over that in operation June 30, 1878, was 3.72 per cent.; the increase in miles of annual service performed over the same was 1.06 per cent.; the increase in the total miles of railroad and steamboat routes was 6.34 per cent.; the increase in miles of annual service performed over the same was 1.48 per cent.

The miles of route on which there were railway post-offices was increased 2.12 per cent., while the annual service performed on these routes was decreased 00.37 per cent. This decrease is more apparent than real, as it arises from corrections in the length and frequency of service on routes.

EXTENSION OF POSTAL-CAR SERVICE IN THE SOUTH.

During the past fiscal year the Washington, D. C., and Lynchburgh, Va., railway post-office was extended to Danville, Va., and a second daily line established, making double daily service between Washington, D. C., and Danville, Va. There was a pressing need for this service, and it has proved of great benefit to the public on that line. To make this line of more importance the second daily line should be established between Lynchburgh, Va., and Chattanooga, Tenn. The line passes through a rich, populous section that demands and ought to have this increased service. Efforts have been made to secure such additional service, but thus far all our exertions have been unsuccessful; but I still have hopes that in the near future such service may be secured.

There was one line of forty-foot postal cars running on the New York and Chicago Railway post-office, which were found inadequate for the service to be performed. These have been substituted with sixty-foot cars, which greatly facilitates the work of distribution to be made between the two important commercial centers of New York and Chicago.

During the past fiscal year arrangements were made to establish single daily railway post-office service between Richmond and Danville, Va., and double daily service between Danville, Va., and New Orleans, La., via Charlotte, Atlanta, Montgomery, and Mobile; double daily service between Petersburg, Va., and Savannah, Ga.; single daily service between Savannah, Ga., and Jacksonville, Fla.; single daily between Kansas City, Mo., and Pueblo, Colo. There was no provision made in the last appropriation to pay these employes, yet the special fund placed at the disposal of the Postmaster-General enabled him to procure this service, and it was thought best to secure it when it could be obtained. The special fund placed at the disposal of the Postmaster-General has proved to be of incalculable benefit to the service, and enabled him to continue harmonious relations with the railroad companies, and secure the additional facilities with greatly improved schedules. It is hoped that Congress will make some provision so that the present facilities may be continued.

MAIL DISTRIBUTED, ERRORS MADE, ETC.

Particular attention is called to the statement of error-slips, mail distributed, &c., Tables C and D, attached hereto.

TABLE C.—Statement of mail distributed on the various railway post-office lines of the railway mail-service during the fiscal year ending June 30, 1879.

Division.	Number of letter-packages distributed.	Whole number of letters distributed.	Number of sacks of paper-mail distributed.	Whole number of pieces of paper-mail distributed.	Whole number of letters and pieces of paper-mail distributed.	Number of packages, pouches, and cases of registered mail-matter.
First	2,934,159	146,707,950	369,351	73,870,200	220,578,150	1,815,056
Second	4,447,438	222,371,900	664,094	132,938,800	355,810,700	1,597,589
Third	1,172,660	58,033,000	193,401	38,092,200	97,325,200	1,034,283
Fourth*	1,213,818	60,690,900	259,649	51,929,800	112,620,700	1,061,172
Fifth	5,948,000	297,400,000	1,035,620	207,124,000	504,524,000	1,644,062
Sixth	8,475,047	423,752,350	1,043,663	208,732,600	632,484,950	1,348,274
Seventh	3,691,630	184,581,500	597,316	118,463,200	304,044,700	1,327,033
Eighth	1,016,281	50,814,050	160,387	32,077,400	82,891,450	307,636
Ninth	4,480,602	224,030,100	574,258	114,851,600	338,881,700	800,685
Total	33,379,635	1,668,081,750	4,898,399	979,679,800	2,648,661,550	10,395,990

* The decrease in mail distributed in the fourth division during the fiscal year is due to the yellow-fever epidemic during the summer and fall months of 1878.

TABLE D.—Statement of errors made by railway post-office clerks and route-agents in the several divisions of the railway mail-service during the fiscal year ending June 30, 1879.

Division.	Number of incorrect slips returned.	Number of errors on incorrect slips.	Missent.			Misdirected.			Number of errors checked against other employees.
			Number of packages.	Number of pouches.	Number of sacks.	Number of packages.	Number of pouches.	Number of sacks.	
First	14,760	24,554	953	71	39	21	15	11	28,761
Second	33,234	62,210	376	38	66	110	4	4	124,012
Third	13,757	22,862	289	4	10	31	2	10	47,286
Fourth	16,425	24,590	463	57	86	117	24	17	85,148
Fifth	115,538	210,723	1,260	114	87	347	43	198	424,129
Sixth	68,847	145,334	1,555	133	90	820	46	136	355,797
Seventh	68,889	110,914	1,242	122	147	104	4	15	228,214
Eighth	1,882	3,994	85	1	.....	84	2	.....	17,871
Ninth	73,323	149,312	791	31	10	10	9	32	136,146
	427,655	763,511	7,024	571	494	1,109	149	439	1,447,304

RECAPITULATION.

Number of letters and pieces of paper-mail distributed during the year	2,648,661,550
Number of errors made in the distribution of same	763,511
Number of letters and pieces of paper-mail distributed to each error	3,469

The report shows an increase of over 400,000,000 pieces of mail handled on the postal cars, or nearly 20 per cent. This amount would have been still larger but for the yellow-fever epidemic in some of the States comprised in the fourth division during the summer and fall of 1878.

The record shows that while the equivalent of 2,648,661,550 separate and individual pieces of mail was distributed by the clerks and route-agents, 763,511 pieces were missent, or one piece in each 3,469 distributed.

REPORT OF THE THIRD ASSISTANT POSTMASTER-GENERAL.

POST-OFFICE DEPARTMENT,
OFFICE OF THIRD ASSISTANT POSTMASTER-GENERAL
Washington, D. C., November 8,

EXPLANATION OF ACCOMPANYING TABLES.

SIR : I have the honor to submit the following report of the operations of this office for the fiscal year ending June 30, 1879, and to draw special attention to the subjoined tables, forming part of the report, numbered from 1 to 19, inclusive, viz:

No. 1. Estimates of the appropriations required by the Post-Office Department for the service of the fiscal year ending June 30, 1879.

No. 2. Statement showing appropriations for the fiscal year ending June 30, 1879, and the expenditures made, by items, out of such appropriations, up to September 30, 1879.

No. 3. Statement exhibiting the receipts and expenditures, under appropriate heads, by quarters, for the fiscal year ending June 30, 1879, compared with the fiscal years ending June 30, 1878, and June 30, 1877.

No. 4. Statement showing receipts and disbursements at Treasuries during the fiscal year ending June 30, 1879.

No. 5. Statement showing receipts and disbursements at depositories of post-offices on account of the fiscal year ending June 30, 1879.

Nos. 6 and 7. Statements showing the number and value of stamps, stamped envelopes, newspaper-wrappers, and postal cards issued during the fiscal year ending June 30, 1879.

No. 8. Statement showing the number and value of official stamps and stamped envelopes furnished each of the executive departments during the fiscal year ending June 30, 1879.

No. 9. Statement showing the increase in the issues of postage stamps, stamped envelopes, newspaper-wrappers, and postal cards for the fiscal year ending June 30, 1879, over those of the preceding year.

No. 10. Statement showing the amount of dead mail-matter turned over to the division of dead letters during the fiscal year ending June 30, 1879.

No. 11. Statement showing the disposition of letters opened by the division of dead letters during the fiscal year ending June 30, 1879.

No. 12. Statement showing the amount, classification, and disposition of unmailable matter received by the division of dead letters during the fiscal year ending June 30, 1879.

No. 13. Statement showing the number of foreign dead letters received and disposed of during the fiscal year ending June 30, 1879.

No. 14. Statement showing the number, classification, and disposition of dead registered letters during the fiscal year ending June 30, 1879.

No. 15. Statement showing the number of registered letters and newspapers transmitted through the mails from each State and Territory of the United States during the fiscal year ending June 30, 1879.

No. 16. Statement showing the number of packages dispatched through pouches from the post-office at New York and through pouch offices, by months, during the fiscal year ending June 30, 1879.

No. 17. Statement showing the number and value of registered packages forwarded during the fiscal year ending June 30, 1879, for the Post-Office and Treasury Departments.

No. 18. Statement showing the operations of the registered-letter system in the cities of New York, Chicago, and Washington during the fiscal year ending June 30, 1879.

No. 19. Statement showing the increase in the amount collected as fees on registered matter at 25 leading post-offices during the fiscal year ending June 30, 1879, over the amount collected during the preceding year.

OPERATIONS OF THE BUREAU.

The work of this office is distributed among the divisions of finance, of postage-stamps, of dead letters, of registration, and of files and records, details of the operations of which are herewith presented, as follows:

DIVISION OF FINANCE.

The appropriations for the service of this office during the fiscal year amounted to \$822,700, and the expenditures to \$714,279.61, leaving an unexpended balance of \$108,420.39, or 13 per cent. of the appropriations. This saving is due to the fact that on the 1st of October, 1878, a new contract for stamped envelopes was entered into at a considerable reduction from the old contract rates, on which the appropriation was based.

The estimated amount of appropriations required to conduct the service of this office for the coming fiscal year is \$882,400, a decrease of \$2,000 from the amount appropriated for the current year. A detailed explanation of the estimates will be found among the papers accompanying the table (No. 1) of estimates attached to this report.

DEPARTMENT RECEIPTS AND EXPENDITURES.

The receipts and expenditures of the department during the fiscal year ended June 30, 1879, as shown by the books of this division, were as follows:

Receipts.

Letter-postage paid in money.....	\$254, 901 41
Box-rents and branch offices.....	1, 381, 162 51
Fines and penalties.....	9, 080 12
Postage-stamps, stamped envelopes, newspaper-wrappers, and postal cards.....	28, 145, 074 99
Dead letters.....	3, 323 39
Revenue from money-order business.....	219, 226 83
Miscellaneous.....	29, 213 61
Total.....	30, 041, 982 86

Expenditures.

The total expenditures for the service of the year were	\$33, 073, 437 83
An excess over the receipts appertaining to and for the last fiscal year, supplied out of appropriations from the Treasury, of.....	3, 031, 454 96

The expenditures given above do not include the sum of \$376,461.63 paid on liabilities incurred during previous fiscal years.

The total receipts for the year were \$764,465.91 (or 2.6+ per cent.) more than those of the preceding year, and \$1,007,884.58 (or 3.4+ per cent.) more than the estimates therefor. The increase of receipts over the amount estimated is largely attributable to the revival of business, and the consequent increased demand for postage-stamps, postal cards, &c.,

to sales of which amounted to \$769,481.87 more than for last year, and \$2,387,559.23 more than for 1877.

Excluding official postage-stamps and money-order receipts for fiscal years, there is an increase of ordinary receipts over past fiscal year of \$671,703.27, or 2.3+ per cent.

Table No. 3, which accompanies this report, shows the receipts and expenditures by fiscal quarters, and the increase or decrease compared with previous years.

An exhibit of the condition of accounts of the last fiscal year, ending 30th of September, 1879, will be found in table No. 2, herewith.

In addition to the receipts stated above, there was drawn from the Treasury, on account of special and deficiency appropriations, of \$3,297,965.25, as follows:

to supply deficiencies in the revenues for the year ended June 30, 1879, act of June 17, 1878.....	\$3,000 00
for transportation of the mails, railroads, for 1878 and previous years, act of March 3, 1879.....	1,000 00
for transportation of the mails, deficiency, 1876 and previous years, act of March 3, 1879:	
Railroad routes.....	\$21,775 73
Star routes.....	4,481 29
Steamboat routes.....	750 00
Mail-messenger service.....	1,508 58
Foreign mail transportation.....	17,357 71
to pay Geo. H. Giddings, late contractor, deficiency, 1876 and previous years, act of March 3, 1879.....	1,000 00
to pay H. G. Boardman, postmaster at Milton, Vt., act of June 19, 1878.....	1,000 00
for payment of increased salary to letter-carriers, &c., act of June 28, 1879.....	1,000 00

3,297,965.25

ESTIMATES.

The estimated expenditures for the fiscal year ending June 30, 1881, are \$39,900,000. The estimated revenue for the same year is \$32,200,000.

leaving a deficiency to be appropriated out of the general Treasury of \$7,700,000.

Table No. 1, accompanying this report, furnishes the estimate in detail.

In estimating the revenue for 1880-'81 the item for official postage stamps was not stated separately, for the reason that official (or postage) envelopes are, in a large measure, taking the place of official stamps, and the estimated revenue from this source is included in the receipts.

CONDITION OF DEFICIENCY APPROPRIATIONS.

The following statement will show the condition of the appropriations from the general Treasury to supply deficiencies in the postal revenue, viz:

1. For the fiscal year ended June 30, 1877, the amount unexpended was \$167,498.00, which, by operation of law, was carried into the surplus fund of the Treasury on the 30th June, 1879, leaving none available for the payment of unsettled liabilities incurred prior to June 30, 1877.

2. For the fiscal year ended June 30, 1878, an additional deficiency appropriation of \$166,392.27 was made, which amount was drawn

the Treasury and placed to the credit of the Post-Office Department for the payment of indebtedness on account of said fiscal year.

3. For the fiscal year ended June 30, 1879, the amount appropriated from the Treasury to supply deficiencies in the revenues was \$4,222,274.72, of which \$1,222,274.72 remains unexpended and available for unadjusted liabilities for said fiscal year.

The unpaid indebtedness of the department for the fiscal year ended June 30, 1879, is estimated at \$713,344.45, for the payment of which there is available, as above stated, the sum of \$1,222,274.72.

RECEIPTS AND DISBURSEMENTS FOR 1879.

The receipts and disbursements at Treasury and Post-Office depositories during the last fiscal year may be briefly summarized thus:

At Treasury depositories:

Balance subject to draft June 30, 1878.....	\$1,780,280 09
Outstanding warrants, June 30, 1878.....	43,646 15
Aggregate receipts during the year ended June 30, 1879.....	10,745,715 60
Total	12,569,641 84
Amount of warrants paid during the year.....	9,896,823 48
Balance at depositories June 30, 1879.....	2,672,818 36
Outstanding warrants, June 30, 1879.....	52,484 13
Balance subject to draft June 30, 1879	2,620,334 23

Transactions at these depositories, in detail, with amount of increase or decrease, as compared with previous years, are shown in table No. 4, accompanying this report.

At Post-Office depositories:

Balance subject to draft June 30, 1878.....	\$530,747 47
Deduct credit balance June 30, 1878	2,753 94
	527,993 53
Aggregate receipts during the year ended June 30, 1879.....	3,901,798 04
Total	4,429,791 57
Disbursements during the year.....	3,729,096 51
Amount subject to draft June 30, 1879.....	700,695 06

Table No. 5, submitted with this report, exhibits the receipts and disbursements at the different Post-Office depositories in detail.

CONTRACTS ENTERED AND ACCOUNTS KEPT.

During the year there were 3,895 contracts for mail service (including 1,150 sub-contracts) received from the Second Assistant Postmaster-General, and 12,700 orders of the Postmaster-General recognizing mail service not under contract, curtailing or extending service or modifying previous orders; being an increase of 1,224 contracts and of 3,764 orders, as compared with the previous year. These contracts were examined, verified, and entered upon the books of the division for reference when passing upon reports from the Auditor for the payment of mail-contractors and other creditors of the department. The number of such reports received and adjusted during the year was 33,950, (an increase of 4,650 over the previous year.)

Accounts were kept with the Treasury, 9 sub-treasuries, and 40 designated depositories, involving the sum of \$10,745,715.60, against which 12,718 warrants were issued.

Accounts were also kept with 99 Post-Office depositories, involving the sum of \$3,901,798.04, of which \$2,890,896.17 arose from the proceeds of the depository offices themselves; \$924,782.49 from deposits by other offices; and \$86,119.38 from collection drafts. Against the accumulations in the depository offices 24,916 drafts were issued, amounting to \$2,510,922.73. In addition to the amount paid out by draft, the sum of \$1,218,173.78 was paid to route-agents, railway-post-office clerks, mail-messengers, and letter-carriers, by the postmasters authorized to make such payments, the accounts for which were rendered monthly to this office.

Upon the deposit desk of this division a record of 10,847 depositing offices was kept (an increase of 8,066 over previous year); 23,712 certificates of deposit were received and entered (an increase of 12,588 over previous year); 13,323 circulars of instruction and inquiry, with Auditor's statements of account, were forwarded to postmasters; and 3,283 letters from postmasters relative to balances due were received, noted upon the books, and properly referred or answered.

DIVISION OF POSTAGE-STAMPS, STAMPED ENVELOPES, AND POSTAL CARDS.

The operations of this division during the year may be summarized as follows: The number of ordinary postage-stamps issued to postmasters for sale to the public was 774,358,780, of the value of \$20,117,259; of special stamps for the collection of postage due (issued in anticipation of the wants of postmasters), 15,667,600, of the value of \$365,957; of newspaper and periodical stamps, 1,552,172, of the value of \$1,088,412.16; of postal cards, 221,797,000, of the value of \$2,217,970; of ordinary stamped envelopes, 80,806,700, of the value of \$2,160,417.92; of stamped envelopes bearing a request to return, 67,058,250, of the value of \$2,139,704.10; of newspaper wrappers, 29,697,000, of the value of \$355,218.90; of official postage-stamps issued to the several executive departments for official use, 14,201,822, of the value of \$624,999.95; of official stamped envelopes and wrappers, 17,209,150, of the value of \$469,011.90; making a total number of 1,222,348,474 and a total value of \$29,538,950.93.

These issues show an increase in value over those of the preceding year as follows: Of ordinary stamps, \$648,641, or 3.33 per cent.; of newspaper wrappers, \$50,573.30, or 16.6 per cent.; of postal cards, \$211,670, or 10.55 per cent.; and of official postage-stamps, \$6,905.35, or 1.11 per cent. They show, also, a decrease in the value of the following: Of newspaper and periodical stamps, \$5,433.14, or .04 per cent.; of ordinary stamped envelopes, \$257,684.99, or 10.65 per cent.; of special-request stamped envelopes, \$43,321.15, or 1.98 per cent.; and of official stamped envelopes, \$5,541.20, or 1.16 per cent.

The total increase in the value of the ordinary issues (including postage-due stamps, which were issued for the first time on the 9th of May last) was \$970,402.02, or 3.53 per cent.; of the ordinary and official issues combined, \$971,766.17, or 3.40 per cent.

In addition to the foregoing articles there were issued 5,529,000 registered-package envelopes, 19,917,950 post-office envelopes (including the free (penalty) envelopes), and 1,505,000 dead-letter envelopes, mak-

ing a total of 26,951,950; also, 2,529 receipt-books used in the collection of postage on newspaper and periodical matter sent through the mails.

The following shows the number of postmasters' requisitions filled during the year:

For ordinary postage-stamps.....	110,959
For postage-due stamps	40,344
For newspaper and periodical stamps	6,949
For ordinary stamped envelopes and wrappers, plain	50,946
For special-request stamped envelopes	67,500
For postal cards.....	58,602
For official postage-stamps	28,432
For official stamped envelopes and wrappers.....	2,866
For registered package envelopes	44,173
For post-office envelopes	39,393
For newspaper and periodical receipt-books.....	2,529
Total	452,693

The increase in this total over the total of requisitions filled during the preceding year is 34,391, or 8.2 per cent.

To fill these requisitions the following number of packages was made up and forwarded:

Of ordinary stamps.....	112,467
Of postage-due stamps.....	40,344
Of newspaper and periodical stamps	6,949
Of ordinary stamped envelopes	73,702
Of special-request stamped envelopes	52,636
Of postal cards	61,803
Of official postage-stamps.....	28,455
Of official stamped envelopes	5,633
Of registered package-envelopes	44,356
Of post-office envelopes.....	66,627
Of newspaper and periodical receipt-books	2,529
Total.....	495,501

This shows an increase over the preceding year of 34,814 packages.

The number of packages lost during the year was five, and in each case the loss was from causes over which the department had no control.

Besides the business represented by the foregoing figures, a large amount of work was done in keeping the accounts of postmasters, in the preparation of the permanent records of the department, in correspondence, in the auditing of claims for losses by fire, in the examination of newspaper receipt-books returned to the department, and in a number of other matters which it would be difficult to enumerate.

POSTAGE COLLECTED ON SECOND-CLASS MATTER.

The amount of postage collected during the year on newspaper and periodical matter mailed from regular offices of publication to subscribers is as follows:

On 42,958,033 pounds, at 2 cents per pound	\$859,160 66
On 8,167,467 pounds, at 3 cents per pound	245,024 01
Total	1,104,184 67

This total shows an increase over the amount collected during the previous fiscal year of \$79,003.69, which is very gratifying, in view of the fact that since the 1st day of May last the rate of postage on newspaper and periodical matter has been reduced to a uniform rate of two cents per pound, under the act of Congress approved March 3, 1879.

The whole number of post-offices at which newspaper and postage is collected is 4,188, being 241 more than during the year.

WEIGHT OF SECOND-CLASS MATTER MAILED.

The following table shows the number of pounds of newspaper and periodical matter mailed, and the amount of postage collected thereon, at six of the principal post-offices in the United States:

Post-offices.	Matter mailed weekly and of tenor, two cents per pound.	Other matter, three cents per pound.	Amount of postage.
San Francisco	2,887,892	370,482	\$68,472
Chicago	3,716,196	548,888	90,790
Cincinnati	1,829,139	237,210	43,699
New York	13,262,246	2,619,416	343,827
Philadelphia	1,656,636	868,340	50,182
St. Louis	2,071,634	185,593	47,000
Total	23,403,745	4,829,929	652,972

POSTAGE-DUE STAMPS.

Under a provision in the act of Congress approved March 3, 1879, authorizing a change in the mode of collecting postage due on letters arriving at destination through the mails, the department began on the 9th of May special stamps, called postage-due stamps, of denominations of 1, 2, 3, and 5 cents, and subsequently of the above denominations of 10, 30, and 50 cents.

Before the 1st of July every office in the country was provided with a supply of these stamps, and the new system of collecting postage due is now fairly in operation. It is expected to result in an increase of revenue to the department from that source. They may be described as follows: Large figures, representing the denominations, are placed in the center of the stamp, and are surrounded by an oval of very delicate lathe-work. On the upper border of the stamp the words "Postage Due" are printed in white letters; on the lower border is the denomination, in letters of the same kind. On either side of the oval are the letters "U. S." in small white shields. Around the entire stamp is a form of complex character, described upon an oblong tablet. The general design is the same for all the stamps, the only difference being in the figures and lettering for the several denominations. The color is the same—a reddish-brown.

INTERNATIONAL POSTAL CARDS.

The department has not yet begun the issue of the 2-cent international postal card, authorized by the act above referred to, the plates for which have only recently been completed by the Treasury Department. The contractors, however, are making preparations to begin printing at an early date, and it is expected that they will be in use on the 1st of January next.

DIVISION OF REGISTRATION.

The total number of letters and parcels registered during the year 1880 was 29,022, of which 4,227,079 were domestic letters, 203,497

parcels of third and fourth class matter, 163,684 letters registered to foreign countries, 3,097 parcels of third and fourth class matter registered to foreign countries, and 831,665 letters and parcels of official matter forwarded for the government, and by law exempted from the payment of registry fees. The amount of registry fees collected during the year was \$459,735.70, an increase over the preceding year of \$44,736.40. The increase in the number of letters and parcels forwarded was 530,218. The actual losses of registered matter during the year were small, consisting of only 989 letters and parcels, or, say, one out of every seven thousand forwarded.

Table No. 15 accompanying this report shows in detail, by quarters, the number of domestic, foreign, and free letters and parcels that were registered in each State and Territory during the year, the amount of fees collected, and the increase over the preceding year.

Table No. 16 exhibits the number of packages dispatched in registered through pouches from the New York office during the year.

In table No. 17 will be found an exhibit of registered matter forwarded for the Post-Office and Treasury Departments during the year. It will be observed that the value of this matter aggregates the enormous sum of \$1,031,517,445.10.

Table No. 18 contains a statement of the registry business done during the year at the post-offices at New York, Chicago, and Washington.

In table No. 19 are some interesting statistics, showing the amount of fees collected (excluding free matter) at the twenty-five leading offices of the country. The fees at these offices amounted to \$78,467.90, or 17.07 per cent. of the total amount collected, and an increase over the previous year of \$20,998, or 36.25 per cent. The remaining offices collected \$381,267.80, or 82.93 per cent. of the total amount, and an increase over the previous year of \$24,189.70, or 6.77 per cent. The New York post-office collected \$27,737.50, or 6.03 per cent. of the total amount, and an increase over the previous year of \$8,789.80, or 46.04 per cent.

REGISTRATION OF THIRD AND FOURTH CLASS MATTER.

In the annual report of last year brief mention was made of the extension on the 1st October, 1878, of the registry system to third-class matter, since then by law subdivided into two classes designated as the third and fourth classes. The step was taken after careful consideration. The law provided generally for the registration of valuable matter, but the system had been confined to letters or matter chargeable with first-class rates of postage. There appeared to be no good reason for the limitation.

The law required the admission into the mails of samples of merchandise and other small articles, and it seemed to be only the duty of the department to extend to this class of matter the additional security afforded by registration, especially since that portion of the work could be done at a profit. The success of the measure has been amply demonstrated. No serious difficulties have been experienced in carrying it into practical operation, and as public attention has become directed to its advantages the business has steadily and rapidly increased.

The postmaster at New York, in reporting the operations of the registry division of his office during the fiscal year, refers as follows to the registration of third and fourth class matter:

The extension of the registry system on October 1, 1878, to include third and fourth class matter, has been the great event of the year.

From the beginning it was regarded by the public with great favor, and the amount of such matter registered has steadily increased and will continue.

Of the 69,644 parcels of third and fourth class matter sent registered from the eastern Territories, and may prove after investigation to be delays through loss. It speaks well for the efficiency of the registry system that such an amount of heavy matter can be suddenly thrown into it, and the only effect showing the perfection of the system. There have been scarcely any losses of contents of any of the parcels sent, and most of those investigated are mistakes on the part of the sender. A larger amount of sample and merchandise, formerly sent in ordinary mail, now go forward registered; consequently great diminution in the ordinary mail complaints respecting such parcels. It will be otherwise, as the registered matter being inspected before it is released, all imperfections as to address, insecure wrapping, &c., are corrected by the evidence of their being mailed is positive, and the parcels are carefully packed before dispatch. This cannot be obtained where they are dropped into the mails.

REVISION OF THE REGISTRY SYSTEM.

The registry system was given much attention during the year. The rules governing its conduct were thoroughly revised in preparation for a new edition of the Postal Laws and Regulations, and the system was greatly simplified. Useless details were dispensed with, and various improvements added. The work of conducting the system has been greatly lessened, without detracting from its security.

The principal changes may be noted as follows:

1. *Abolition of distributing offices.*—By this change all registered matter is mailed direct to the office of destination without the intervention of the distributing offices, which are thus saved the labor of making new invoices and keeping records of registered packages in transit.

2. *Extension of through-pouch system.*—As a result of the change above, the through-pouch system, the operations of which have been explained in previous reports, has been largely extended by the addition of many new through-pouch offices, and the multiplication of changes between offices authorized to use the through pouches. These changes have greatly facilitated the dispatch of registered matter at the same time increased its security.

3. *Abolition of the return-registered-letter bill.*—The registered-letter bill and the return-registered-letter bill were in effect duplicate bills between postmasters, the former being retained at the receiving office, and the latter returned to the dispatching office as a voucher. The registered-letter bill has been made to serve both purposes, requiring the receiving postmaster to return it with his acknowledgment to the dispatching postmaster, and a considerable saving of labor was accordingly effected by dispensing with the one bill. The single bill now in use has been designated as the Registry Bill.

4. *Combination of records.*—The "Registered-Receipt Book" and "Account of Registered Letters Sent," two separate records kept at the dispatching office of matter received from the public and forwarded, have been combined into one book designated as the "Registration Book, or List of Matter Registered and Dispatched." At the office of destination two separate records, of "Registered Letters Received for Delivery" and "Account of Registered Letters Delivered," have been united in one, called the "Record of Registered Matter Received and Delivered." Duplicate entries of registered matter handled have been avoided at both mailing and dispatching offices, leading to a very material reduction of labor.

5. *Adoption of blanks on card form.*—The registry-return receipt which by law the sender of a registered parcel is entitled to (from the addressee) has been placed on cardboard of the size, for

quality of the postal card in public use, and forwarded through the mails without inclosure in envelopes. The plan is really that of adapting the postal card to official purposes. On one side of the card is a form for the signature of the addressee, and on the other the name and residence of the sender so arranged as to constitute a return address. Less writing is required on the card than on the paper form it superseded; and as each card takes the place of a paper form and two envelopes, the great economy of clerical labor and material will be readily apparent in view of the volume of registry business transacted.

The registry bill previously referred to has also been put on card form, with equally beneficial results. This improvement has been the subject of warm commendation from postmasters. As there can be no doubt that this improvement, so advantageously begun in the registry system, is equally well adapted to other branches of postal business, I respectfully recommend that it be at once put into operation wherever it is applicable.

DIVISION OF DEAD LETTERS.

The whole number of dead letters and packages received and disposed of during the year was 2,996,513, a decrease of 190,292 from last year's receipts.

The fact that while there has been an increased number of letters mailed annually in this country, a reduced number has been sent to the department as dead, presents an anomaly which can be explained only upon the theory of increasing efficiency of the delivery service and the growing popularity of the return-request system.

The extent of the latter will be illustrated by the statement that of the 533,934 letters mailed in a single day at Baltimore, Boston, New York, and Philadelphia 287,835* bore upon the envelope some clew by which they could be restored to the writer if undelivered, without the intervention of the Dead-Letter Office.

Of the letters opened 16,007 contained \$31,591.49½; 13,755 contained drafts, checks, notes, money-orders, &c., to the value of \$1,105,762.07; 47,797 contained postage-stamps to the value of \$2,387.53; 24,372 contained receipts, certificates, paid notes, &c.; 24,024 contained photographs; and in 38,306 letters and parcels were found jewelry, books, clothing, merchandise, and miscellaneous articles in endless variety, from a small bottle of choice perfumery to a large box of Limburger cheese.

The increase in the number of letters containing money orders and postage-stamps, and the decrease of those containing money, is attributable to the retirement of fractional currency, which formerly furnished a convenient means of making small remittances by mail.

The mode of treating insufficiently prepaid letters has been slightly modified during the past year, and the present system seems to be the most satisfactory of any which has yet been devised for disposing of that unfortunate class of correspondence. It is as follows: Those that bear a name and address, or a business card, post-office box, or other designation by which the writer can be identified, are immediately restored to the owner, or his attention invited to the deficiency of postage by the postmaster at the mailing office. Of the balance, all "local" or "drop" letters are delivered by the postmasters to the persons addressed, upon payment by them of the necessary postage, after due notice of the fact and cause of detention. The remainder are sent to the Dead-Letter Office, and are at once examined by an expert, who, taking into consid-

* These figures are based upon the results of an actual count during the first seven days in November, 1879.

ation the places of origin and destination of each letter, 'det
hether it can be returned to the writer in less time than wou
nired to collect the postage from the addressee and forward t
) destination. And each letter is then treated in the way de
e the quicker. Wherever a doubt exists, or where the diff
ery small, the postage is collected and the letter forwarded, t
rving the seal intact.

The amount of money deposited to the credit of the Post-O
artment from letters which could not be restored to the own
3,323.39.

The value of stamps received for postage on unpaid and sh
atter forwarded to address, and upon unclaimed third and four
atter returned to senders, was \$4,471.70.

Of the whole number (5,262,241) of registered letters and p
ailed in this country during the year, but 2,193 found their v
ie Dead-Letter Office; and of these 1,982 were successfully rea
ie owners, 177 were filed subject to identification, and 34 are o
ig; that is, opened and sent to postmasters for delivery, and th
ot yet reported.

The number of undelivered foreign registered letters was 3,68
ere all returned unopened to the countries of origin and re
nowledged.

The number of ordinary foreign dead letters was 147,886, wh
ailed in the United States and returned unclaimed by foreign
ients was 94,669. This difference is accounted for by the m
abits of foreigners, who upon reaching this country either fail to
correct post-office address to their kinsmen in the old count
ot profit by their privilege to have mail-matter forwarded fr
lace to another without additional postage charge.

Tables Nos. 10 to 14 inclusive, herewith submitted, contain mi
ails of the work accomplished in this division during the year.

COMPENSATION OF POSTMASTERS.

In the annual report for the fiscal year ending June 30, 1877
hare of attention was given to the abuse in the sale of postage
y reason of the inducements offered postmasters by the large
ons then forming the basis of their compensation, and it wa
ended that the law be changed to compensate postmasters at
ass offices by commissions on stamps canceled on matter depos
ailing.

This recommendation was favorably acted upon by Congress,
ew system went into effect on the 1st July, 1878. The beneficia
f the change have already been made apparent. Estimating
rease in compensation at the same rate as the increase in th
tamps (2.8 per cent.) would give the amount required for that
nder the old system at \$8,201,231.57, or \$1,015,691.82 more t
mount actually expended under the new system. This latter
ay accordingly be taken as the annual saving by the change.
om the pecuniary advantages to the department, the most ince
enefits have resulted from curing the demoralization wrought
ostmasters by speculations in stamps to which they were tem
ie old method of compensation.

I have the honor to be, very respectfully, your obedient serva

A. D. HAZEN

Third Assistant Postmaster-General

Hon. D. M. KEY,
Postmaster-General.

OCEAN MAILS.

Statement showing the amounts recognized in payment of ocean-mail transportation performed during the fiscal year ended June 30, 1879.

TRANSATLANTIC MAILS.

By Cunard Line, 52 trips from New York.....	\$34,648 16		
By Cunard Line, 33 trips from Boston.....	1,194 42		
		\$35,842	58
By Hamburg Line, 52 trips from New York.....		21,968	49
By Liverpool and Great Western Line, 37 trips from New York.....		23,620	09
By North German Lloyd Line, 52 trips from New York.....	21,226 07		
By North German Lloyd Line, 24 trips from Baltimore.....	13 68		
		21,239	75
By White Star Line, 51 trips from New York.....		22,120	68
By Inman Line, 52 trips from New New York.....		21,434	97
By Anchor Line, 47 trips from New York.....		2,227	86
By Canadian Line, 51 trips from New York.....		803	50
By American Line, 44 trips to Philadelphia.....		1,531	09
By General Transatlantic French line.....		2,983	63
			\$153,749 64

TRANSPACIFIC MAILS.

To Japan and Hong-Kong, China:			
By Pacific Mail Line.....	\$809 18		
By Occidental and Oriental Line.....	1,156 73		
		1,965	91
To Shanghai, China:			
By Pacific Mail Line.....	308 20		
By Occidental and Oriental Line.....	272 80		
		581	00
To New South Wales, other Australian colonies, New Zealand, Fiji Islands, and the Sandwich Islands:			
By Pacific Mail Line.....		8,457	48
			11,004 39

MISCELLANEOUS.

To and from the Isthmus of Panama, Central America, and South Pacific:			
Outward mails.....	\$8,644 44		
Inward mails.....	7,181 85		
		15,826	29
To Mexico.....		4,931	34
To Cuba.....		5,366	22
To and from other West India Islands:			
Outward mails.....	3,131 15		
Inward mails.....	710 76		
		3,841	91
To Brazil.....		3,061	64
From Uruguay.....		44	90
To Venezuela.....		744	09
To Canada.....		337	64
			34,154 03
Total.....			198,908 06

ARGUMENT OF HON. A. A. FREEMAN, ASSISTANT ATTORNEY-GENERAL FOR THE POST-OFFICE DEPARTMENT.
IN RE COMMONWEALTH DISTRIBUTION COMPANY vs.
POSTMASTER LOUISVILLE, KENTUCKY.

MAY IT PLEASE THE COURT: This is an application for a mandatory injunction to restrain the postmaster at Louisville from obeying the order of the Postmaster-General, directing her to refuse to deliver letters addressed to the Commonwealth Distribution Company, and to return the same to the Dead-Letter Office. It involves the question as to whether the direction of the Postmaster-General has the sanction of the law, for it is admitted that the action of the postmaster in withholding such letters cannot be justified unless the instruction of the Postmaster-General is supported by authority of law.

It is the law rather than the instruction of the Postmaster-General that must justify her action. Within the last half century much has been said in this country and in England on the subject of the rights, powers, and duty of the government in the transmission of mail matter. As late as the 8th of April, 1845, Sir James Graham declared in the House of Commons that the power to open and examine letters had been intrusted to the Executive Government from the earliest period, bearing date even prior to the Revolution. That it was too much to expect that the postal authority of the government, conducted by responsible servants of the Crown, should be made the medium of communication in the promotion of violent and treasonable designs against the safety of the state, and against peace and good order. (Hansard's Parliamentary Debates, vol. 79, p. 318.)

This doctrine was stoutly resisted at that time, and happily has never obtained in this country.

The policy of our legislature has ever been to exclude improper matter altogether, and to preserve sacredly the inviolability of matter permitted to be sent. Once admitted that matter is unmailable, the duty of exclusion follows. On the other hand, when it is admitted that the matter is mailable, it becomes the duty of the government to forward it with due celerity and certainty, and to deliver it promptly. It is only when a question like the one now presented arises as to which of the two classes the matter belongs that any embarrassment can arise.

If the letters in controversy are mailable matter, then the petitioner is entitled to have them delivered to him; if not, he has no such interest in them as will entitle him to sustain the action. It becomes necessary, therefore, to ascertain what the law is concerning this subject.

The first provision of law in relation to lotteries is found in section 13 of the act approved July 27, 1868, and is as follows:

That it shall not be lawful to deposit in a post-office to be sent by mail any letters or circulars concerning lotteries, so-called gift-concerts, or other similar enterprises, offering prizes of any kind under any pretext whatever.

This was followed by the act of June 8, 1872, section 149 of which provided—

That it shall not be lawful to convey by mail, nor to deposit in a post-office to be sent by mail, any letters or circulars concerning illegal lotteries, so-called gift-concerts, or other similar enterprises offering prizes, or concerning schemes devised and intended to deceive and defraud the public for the purpose of obtaining money under false pretenses, and a penalty of not more than five hundred dollars, nor less than one hundred dollars, with costs of prosecution, is hereby imposed upon conviction in any Federal court of the violation of this section.

This latter act was amended by section 2 of the act approved July 12, 1876, by striking out the word "illegal."

It became, therefore, under this act, unlawful to carry in the mail any letter concerning any character of lottery, whether legal or otherwise. The Postmaster-General, in pursuance of what he understood to be the law, instructed postmasters to refuse to receive or deliver letters addressed to lottery companies or their agents as such. This order was based on what he regarded as a fair and legal presumption that letters addressed to lottery companies "concern" a lottery.

I shall endeavor to show by reason and authority that this is the correct construction of the law, and that the order in question is simply in the line of carrying out the intention of Congress.

I desire to cite a case in which a court of very high authority laid down a rule by which the nature of the contents of a sealed letter might be presumed, without any other evidence of its contents than the circumstances under which it was being carried.

The sixteenth section of the act of April 30, 1810, provided that no person except a mail-carrier should receive for carriage over a mail route any letter or packet, excepting only "such letter or letters as may be directed to the owner or owners of such conveyances and relating to the same, or to the person to whom any packet or bundle in such conveyance is intended to be delivered." (2 Statutes, page 596.)

The supreme court of Massachusetts, in construing this statute, in the case of *Dwight vs. Brewster* (1 Pickering, 50), held as follows:

That section prohibits any person otherwise than the Postmaster-General or his deputies, or persons by them employed, from being concerned in setting up or maintaining any foot or horse post, stage, wagon, or other stage-carriage, on any established post-road, or from one post-town to another, on any adjacent or parallel road, for the purpose of carrying any letters or packets, except newspapers, &c., and punishes by penalty the carrying of letters, &c., except such as may be directed to the owner of the conveyance, and relating to the same, or the person to whom the packet or bundle in such conveyance is intended to be delivered. The carrier of the mail is not prohibited from taking packets and bundles any more than passengers. He will have a right, then, under this section to take letters directed to the owners of such packets or bundles. If, therefore, a letter had been proved to have been sent with a parcel of bank notes, no offense would have been committed. The case of *Bennett vs. Clough* is similar to the present one. There a parcel containing bank-notes, stamps, and a letter was sent by a common carrier, and there being no evidence of the contents of the letter, the presumption of law was that it related to the parcel sent. So here, supposing a letter had been sent, unless its contents were proved, it would be presumed to relate to the bundle.

If a letter sent by a common carrier directed to the consignee of a package conveyed at the same time raises a presumption that the contents of the letter relate to the package, with how much stronger reasoning may it be said that a letter addressed to a company or corporation raises the presumption that it relates to or concerns the business of that corporation? This presumption is supported by the almost universal experience of mankind. It is not unusual that letters are addressed to private individuals which do not concern their particular calling or avocation.

The subject-matter of communications thus addressed is of such a variety of character as to be subject to no classification, and give no indication in their address of the subject-matter of their contents. In the case of private partnerships the presumption that the letter addressed to such partnership relates to or concerns the business of the partnership, while stronger than the case of private individuals, is nevertheless not so conclusive as in the case of corporations. So strong, however, is the presumption that letters addressed to a person at his place of business

ates to the business of the person addressed, that it was proper of bankrupts—

By 12 and 13 Vict., c. 106, s. 124, the court of bankruptcy may order that for a period of three months from the date of any such order, all posted letters directed to any bankrupt at the place of which he shall be described in the adjudication of bankruptcy shall be redirected, readdressed, sent, or delivered to the postmaster-general or the officers acting under him, to the official or other person named in such order; and upon notice by transmission of any such order to the postmaster-general or the officers acting under him, or to any other assignee or other person named in such order, of the making of such order, it shall be lawful for the postmaster-general or such officers as afore said, in England, Scotland, or Ireland, to readdress, redirect, send, or deliver all such letters to the official or other assignee or other person named in such order; and the court may, upon application to be made for that purpose, make such order for a like purpose or for any other less period as often as may be made. (See *Whitaker's Common Law Digest*, page 6855.)

It was accordingly held in *Meirelles vs. Banning* (2 Barnwell & C., 909) that—

Letters having arrived at a post-office, addressed to a party who had become bankrupt, the assignee, (in that character) demanded them of the postmaster, and being *bona fide* that the assignee was entitled to have them for the purpose of transmission, delivered them up; this having been the practice of the office in similar circumstances for more than thirty years. Held, that the postmaster was liable under 9 Anne, c. 10, s. 40, for wittingly, willingly, and knowingly detaining them, and causing them to be detained and opened.

The presumption that letters addressed to a corporation concerning its business for which the corporation was chartered is in fact rather than a mere presumption. Any presumption to the contrary involves the assumption as a matter of law that the corporation is acting *ultra vires*.

The company on whose motion these proceedings are had, and in which the letters have been detained, has no authority of law for the transaction other than lottery business. It has no social relations to be preserved through the medium of the mails, and its powers being limited and regulated by law, it is not empowered to transact business of a general character.

I have so far treated the question as if lottery companies were on a par with the government the position of ordinary corporations, chartered for the purpose of promoting agriculture, science, the arts, or other objects of general interest to the public. I submit, however, that a distinction exists between lottery companies, although authorized by law, and other institutions of the character mentioned.

Leaving out of view altogether the *morale* of the question, it is sufficient to say that the highest recognition they have ever received at the hands of the courts is that of mere toleration.

The Supreme Court of the United States, in the case of *Barron vs. Mayor of Baltimore* (10 Wheaton, page 402), in discussing the right of a lottery to be authorized by an act of Congress, observes:

However questionable may be the policy of tolerating lotteries, there is no question respecting the policy of removing, as far as possible, from those who are engaged in them, all temptation to fraud.

It is placed in the same category with the selling of intoxicating liquors, gaming, &c. (Bishop on Criminal Law, vol. 1, page 49.) By the statute 10 and 11, W. III, c. 17, all lotteries are declared to be public nuisances, and all grants, patents, and licenses for the same to be contrary to law. (2 Blackstone, page 167.)

The act of Congress which declares that no letter or circular "containing" a lottery shall be carried in the mail, recognizes this fact. If lottery companies possess the same right to use the mail as

vested in private citizens, such an act of Congress would unquestionably render null and void the restriction upon carriage of the excluded matter by private post, for while Congress under the Constitution possesses plenary powers over the subject-matter of the establishment of post-offices and post-roads, yet the exercise of the power of exclusion must be confined to matter deemed injurious to the public morals, or in some manner detrimental to the common interests, otherwise the excluded matter may be carried by private post, for the power to prohibit the carriage of any special class of legitimate correspondence by private post rests upon the existing fact that mail facilities for that special class of correspondence is provided by the public post, and on the failure of such facilities, the government abandoning the monopoly as to that class, the reason of the restricting and the restriction itself fall together.

That the lottery business has a "demoralizing influence upon the people" is a fact that has been repeatedly recognized, both by the courts and by Congress.

The policy of the law is to widen and extend the range of mail facilities to the citizen for the transaction of legitimate business, and to deny it altogether for the purposes of promoting the business of lottery companies. There is every presumption of law in favor of the former; the sanctity of his right to use the mail is regarded as inviolate and perfect. Yet even this right does not permit the private citizen under cover of the seal to use the mail for prohibited purposes. In the language of the Supreme Court of the United States in *Ex parte Jackson* (6 Otto, 627)—

Whilst regulations excluding matter from the mail cannot be enforced in a way which would require or permit an examination into letters or sealed packages subject to letter postage, without warrant, issued upon oath or affirmation, in the search for prohibited matter, *they may be enforced* upon competent evidence of their violation obtained in other ways; as from the parties receiving the letters or packages, or from agents depositing them in the post-office, or others cognizant of the facts.

If this right of the citizen is subject to this restriction as declared by the Supreme Court, how much less is the right of a corporation, whose chartered existence is a living invasion of the social law; whose only chartered use of the postal service is to violate its express law, which declares that nothing "concerning" it shall be carried in the mails. No circulars and no letters, sealed or unsealed, that "*concern*" a lottery shall be sent in the mails.

But it is insisted for the company that, notwithstanding the act of Congress prohibiting the transmission of letters "concerning" lotteries, lottery companies are nevertheless entitled to the use of the mails for the transmission of all matter declared by law to be mailable; that while neither the company nor individuals have a right to send letters or circulars "concerning" a lottery, such company and its correspondents have, in common with all other citizens, the right to use the mails for the transmission of mailable matter; that if a letter addressed by a private individual to a lottery company "concerning" a lottery is unmailable, the same is equally true of such a letter addressed by one private individual to another; that the authority of a postmaster to detain a letter is the same in either case, and that if he is not authorized to detain letters in the one case on account of any suspicion he may have of its contents, he is equally unauthorized in the other.

In short, that while he may refuse to transmit or deliver letters "concerning" a lottery, yet he must do so at his peril. That if in the attempt to discharge this duty he should unwittingly detain a letter not subject to detention, he is guilty of a violation of section 3891 of the Revised

Statutes, which prescribes a *heavy penalty* for unlawfully detaining, delaying, or opening letters.

If this be a correct construction of the law, and a fair interpretation of the right and duties of postmasters acting thereunder, it becomes at once evident that the statute is a deadletter, and cannot be enforced. It is something more; it is a snare to entrap the honest but unwary public official.

That a postmaster may, under some circumstances, lawfully detain a letter seems clearly implied by the wording of section 3890 Revised Statutes, which provides "that any postmaster who shall *unlawfully* detain in his office any letter or other mail matter, &c., *the posting of which is not prohibited by law, with intent,*" &c.

It is not, therefore, every detention of *strictly mailable* matter that is unlawful.

Section 3937 Revised Statutes provides that—

All domestic letters deposited in any post-office for mailing, on which postage is wholly unpaid, or paid at less than one full rate as required by law, except letters lawfully free, and duly certified letters of soldiers and sailors and marines in the service of the United States, shall be sent by the postmaster to the Dead-Letter Office at Washington.

Again, section 3895 provides that—

All letters, packets, or other matter which may be seized or detained for violation of law shall be returned to the owner or sender, or otherwise disposed of as the Postmaster-General may direct.

It is, therefore, the *unlawful* detention of *mailable* matter that constitutes the offense. Let us admit, then, for the sake of the argument that lottery companies have the same right to use the mails as that possessed by other corporations, or by individuals, for the transmission of mailable matter. What then becomes its duty, and what the duty of the postal officials under the law? We think it will hardly be questioned that, under a statute which makes a letter "concerning" a lottery absolutely unmailable, a letter addressed to a lottery company is at least presumably unmailable.

The law excludes from the mails all liquids, poisons, glass, explosive material, obscene books, lottery letters and circulars, and all articles which from their form or nature are liable to destroy, deface, or otherwise injure the contents of the mail-bag, or the person of any one engaged in the postal service. Here is a very large class of unmailable matter, embracing thousands of articles, many of them useful, some of them absolutely essential to the comfort of mankind. Many of these articles are unmailable on account of their material, others on account of their form, and still others on account of their supposed moral effect. In determining whether any article presented for mailing falls within the prohibition, or belongs to either one of the classes of prohibited matter, the postmaster is bound to exercise a sound discretion, and it is not to be presumed that the law requires him to exercise that discretion at his peril. It is equally unlawful for him to detain mailable matter, or to forward unmailable matter. How, for instance, is the postmaster to determine whether a book offered for mailing is obscene, or that a certain article is calculated to injure the contents of the mail-bag, or injure the person of any one engaged in the postal service? Explosives are unmailable. Must he test the suspected article? Poisons are excluded. Must he call in the aid of a chemist? Or, must these several articles be excluded by him at the peril of a heavy fine and imprisonment if he should make a mistake?

Such a construction of the law seems absurd. It is submitted that in

all cases of this character it is not an unreasonable requirement to expect the sender of the questionable article to remove a doubt which he himself has raised. He, and he alone, can do it, and that, too, without expense or without violating the rights of any one. He ought to consider that the masses of the people, supposed to be represented by the law, have rights to be protected in common with himself.

It is freely admitted that many articles which are declared by law to be unmailable may be sent under the cover of a seal. A poison may be so concealed and sent; but if the usual sign used by druggists to indicate poison were printed on the envelope to warn persons handling it of its dangerous contents, it will hardly be contended that the sanctity of the seal would insure its transmission. The determination of these and similar questions involves the exercise of something more than merely ministerial functions. Certain matter is excluded from the mails on account of its *weight* alone. In the determination of the question of the mailability of articles of this character, nothing is left to the discretion of the officer.

But whether the contents of a letter "concern" a lottery, or are "liable to destroy, deface, or otherwise *injure* the contents of the mail-bag, or the *person of any one engaged in the postal service*," are not ministerial questions, but are judicial in their character, and must be solved in the exercise of a sound discretion, by the aid of such practical appliances as may be in the reach of the officer whose judgment is thus appealed to.

My argument thus far has been based on the assumption that lottery companies are entitled to use the mails for the transaction of other than lottery business. Now, may it please the court, I have the honor to submit, that under a fair interpretation of the postal laws and the laws regulating the powers of corporations, lottery companies are not entitled to use the mails for any purpose, and that the obvious effect of the statute forbidding the transmission of letters and circulars "concerning" a lottery is to interdict the transmission of any letter or circular addressed to a lottery company or its agent as such.

The Commonwealth Distribution Company, although chartered by the State of Kentucky, is not a citizen of the United States.

Mr. Chief Justice Taney, in delivering the opinion of the court in the case of the Ohio and Mississippi Railroad Company *vs.* Wheeler (1 Black, 295), said:

In the case of the Bank of Augusta *vs.* Earle (13 Pet., 512) the court held that the artificial person or legal entity known to the common law as a corporation can have no legal existence out of the bounds of the sovereignty by which it is created; that it exists only in contemplation of law and by force of law; and where that law ceases to operate the corporation can have no existence. It must dwell in the place of its creation.

It had been decided in the case of The Bank *vs.* Deveaux (5 Cr., 61), long before the case of the Bank of Augusta *vs.* Earle came before the court, that a corporation is not a citizen within the meaning of the Constitution of the United States. * * * The averments in the declaration, said the judge, would seem to imply that the plaintiffs claim to have been created a corporate body, and to have been endued with the capacities and faculties it possesses by the co-operating legislation of the two States, and to be one and the same legal being in both States. If this were the case it would not affect the question of jurisdiction in this suit. But such a corporation can have no legal existence upon the principles of the common law, or under the decision of this court in the case of the Bank of Augusta *vs.* Earle, before referred to.

Under the Constitution it is perfectly competent for Congress to deny the use of the mails to this or any other corporation. Unlike individuals corporations possess no natural rights, and only such legal rights as the law-making power may see proper to confer upon them. It invokes in this case the authority of law to compel an officer of the United States to deliver its mail matter under a law which declares that letters con-

cerning its business shall not be carried in the mails. Its charter does not authorize it to transact other than lottery business. If the letters it seeks to get possession of do not relate to that business it has no interest in them; if they *do* relate to that business their delivery is unlawful. It must confine itself strictly to the purpose of its organization. Whatever it does "concerns" a lottery. If it sends a letter, it is a letter "concerning" a lottery. If it receives a letter, it is letter "concerning" a lottery. The very addresses on the back of the letters it now seeks to recover "concern" a lottery.

If the letters do not "concern" a lottery, then the lottery company ought not so seriously to concern itself about the letters. If these letters do not relate to its business as a lottery company, then the company is putting itself to, an extraordinary amount of labor and expense to accomplish a purpose in which it has no interest.

It must not be forgotten in this connection that we are discussing the rights of the corporation as such. The individual members of it have rights in common with other citizens. They enjoy the same postal facilities; they may send or receive letters on any subject on which they may choose to write. It is the soulless concern known as the Commonwealth Distribution Company of Kentucky whose supposed rights we are discussing, a corporation whose only recognition by the laws of the United States is found in a statute that excludes its letters and its infamous literature from the mails. Its only legitimate business constitutes a species of gambling, the most insidious and, therefore, the most dangerous and demoralizing known to the experience of mankind. Denounced long ago by the laws of England as a nuisance, denied the use of the mails by the law of the land, and its very existence made a criminal offense by the laws of all the States except two or three, it requires a remarkable degree of forensic temerity to claim for it the same right to use the mails as that possessed by an incorporated institution of learning.

It is insisted, however, that the act of Congress must be literally construed. That if Congress had intended to prohibit the transmission of letters "directed" to lottery companies it would have said so. That the interdiction extends only to letters whose contents relate to or "concern" a lottery. A moment's consideration will, I think, demonstrate the incorrectness of this construction of the act. Let us see.

A letter addressed from A to B setting forth the character of the Commonwealth Distribution Company of Kentucky, showing how the investment of a few dollars in the tickets of that institution would realize to the investor a fortune without the labor and waiting incident to the old way of money making, would be a letter "concerning" a lottery; and yet I apprehend that no one will be found to insist that such a letter is within the interdiction of the statute, provided that neither of the correspondents is in any way concerned as agent or otherwise in promoting the interest of the company. A circular setting forth the author's ideas of the immensely corrupting influence of this worst of all species of modern gambling would be literally a circular "concerning" lotteries, and yet the proposition that such a circular would be unmailable would be treated as simply absurd.

What does the act of Congress mean? What was its enactment designed to accomplish? It meant simply to strike down lottery business by breaking up all postal communications between the companies, their agents, and their victims. In order to effect this purpose it used the very strongest and most comprehensive term it could command.

This, like all other statutes, must be construed with reference, first, to the law as it existed at the date of its enactment, and as it was allowed

to remain unaffected by the statute in question, and, second, to the intent of Congress. And in the third place, every act of Congress must receive, if possible, a construction that will render it operative in carrying out the intention of Congress, rather than a construction which renders it void and of no effect. Taking these rules as a guide, we submit, first, that under the law as it existed at the time this statute was passed, no post-office official or other officer of the government was authorized to open a letter with a view to ascertain its contents. It is reasonably fair, then, to conclude that Congress contemplated some other mode of determining whether a letter "concerned" a lottery. Nor is it perceived that there is any other means by which the postmaster whose duty it is claimed is to forward or deliver the letter is enabled to acquaint himself with its contents, except from the address upon the letter. The writer of the letter is unknown. The lottery company declines to disclose the contents of the letter or the name of the writer. As to the second proposition, we have already shown that the object sought to be attained by Congress was the suppression of lottery business so far as that object could be accomplished by denying to companies carrying on that business the right to use the mails.

We are, therefore, driven as a last resort to conclude either that the order of the Postmaster-General directing postmasters to refuse to forward or deliver letters addressed to lottery companies is authorized by law, or that the statute under consideration is a dead letter, a legislative abortion.

Are we driven to the latter alternative by the necessities of this case? Let us see if we are not warranted in assuming for administrative purposes that every letter arriving at this post-office addressed to this company concerns the business of the company, and is therefore unmailable. This company has in every leading newspaper in the United States advertised its business. The only business it proposes to do, the only business it is authorized to do, is a business concerning which the law declares "no letter or circular shall be carried in the mails." It invites the people everywhere to violate this law. It offers a bribe to any one who will disregard the law. It offers a premium for crime and promises the largest premium to the worst criminal. It carefully lays its snare and delusively spreads its fatal net, and then with the song of the siren it allures the thoughtless and tempts the avaricious.

In response to its seductive allurements, thousands of letters come pouring like a flood into the post-office. Now, if the court please, it is not seriously questioned that nine-tenths of these letters concern the lottery, and have been sent in violation of law; for it is idle to say that, of all the world, the postmaster is the only person supposed to be ignorant of the contents of these letters. Gentlemen may ridicule the proposition that the postmaster is authorized to *presume* that these letters relate to the business of the lottery company. It is something more than presumption with him. He knows that the most of them relate to that business, and are, therefore, unmailable. This is a fact known to the postmaster, known to the parties, known to the court, and known to the world. Indeed, the plaintiff in this action does not dare to question it. "But," say the company, "while it is admitted that a portion of this mail, perhaps the larger portion, concerns our lottery, we possibly, and very probably, have other letters that do not concern the lottery, and those you dare not detain." We reply, unhesitatingly: "In the first place, if there are letters here that are simply addressed to you that do not in any manner concern your business, you have no interest in them and, therefore, no right to demand them. If you were a citizen of the United

States it would be otherwise; you would then have a right to receive and transmit letters on any subject not prohibited by law, and the law will not presume that your letters relate to prohibited matter; but you are a corporation, and the only business you are authorized to transact is one concerning which the law declares no letters shall be sent in the mails. The necessary presumption or conclusion arising from the address of this letter makes it unmailable."

But, suppose, if the court please, that I am mistaken as to my conclusion that an address on a letter to a lottery company makes it unmailable, and that, on the contrary, such company is entitled to the use of the mails for other purposes, then I say it becomes the duty of the company to separate its mailable from its unmailable matter.

By the law, both of this country and England, the person whose property another has fraudulently mixed with his own, has the right to take possession of the whole mass, for the purpose of separating and securing, or of disposing of the portion belonging to himself, and where the separation and identification cannot be made, the law gives the entire property to him whose goods have been fraudulently mingled. It is for the party guilty of the fraud to distinguish his own goods satisfactorily or lose it. The court will not identify his property for him. (Bigelow on Frauds, pages 97 and 98 and notes.)

Where one person adds mill-logs of his own to a pile of logs belonging to another person, and marks them in the same manner as the others are already marked, he cannot afterwards maintain replevin against such other person for his proportion of the logs, but only for such logs as he can identify to be his own (*Dillingham v. Smith*, 30 Me., 370); Compare *Haseltine v. Stockwell* (30 Me., 237); *Bryant v. Ware* (30 Me., 295); *Foster v. Cushing* (35 Me., 60); *Stephenson v. Little* (10 Mich., 433); *Wilson v. Wentworth* (25 N. H., 5 Post., 245); *Jenkins v. Steanka* (19 Wis., 126); *Root v. Bonnema* (22 W., 539). "The rule is so strict that if the confusion of goods is produced by the wrongful act of one of the owners, he loses his right to the whole, and even his creditors cannot attach his interest or share." (*Beach v. Schneally*, 20 Ills., 185; *Breckenridge v. Holland*, 2 Blaskyt, Ind., 377; *Leary v. Dearborn*, 19 N. H., 351; 39 W., 557; 2 John. Ch., 62; 4 Bos., 155.)

In the case of *The Distilled Spirits*, 11 Wal., 356, the Supreme Court, in pronouncing the opinion, use this language: "It needs no learned examination of the doctrine of confusion or mixture of goods to make it apparent that if certain spirits belonging to the government by forfeiture are voluntarily mixed with other spirits belonging to the same party and passed through the process of rectification in leaches, he cannot thereby deprive the government of its property; and if the government only claim its fair proportion of the rectified spirits, he certainly cannot complain of injustice. The only result of applying the doctrine of confusion of goods would be to forfeit the entire mixture."

Is the right of this company to such of its letters as do not concern a lottery, supposing there are such (although no such allegation is made in the petition), of any higher character than that of the farmer to the wheat which he has fraudulently mingled with his neighbor's? The former, knowing that his wheat is of an unmerchable grade, fraudulently mingles it with a better grade belonging to his neighbor. The law, therefore, tells him he must lose his wheat. The lottery gambler fraudulently procures his mailable and unmailable matter, to be so mingled as to render its separation impracticable. Now why should he be more highly favored than the farmer? "The law will not sanction the fraud of a corporation sooner than that of an individual." (Angell & Ames on corporations, sec. 284, p. 280.)

The proportion that the lottery business has assumed within the last few years, invokes the serious consideration of the court and the country. Take, for example, the State of New York, where the organization of lottery companies or even the sale of lottery tickets is prohibited by statute. There are to-day in the city of New York alone 33 lottery agencies, receiving weekly, on an average, 7,661 ordinary, and 1,993 registered letters. Millions of dollars are flowing annually into their coffers. They are huge financial vampires sucking the life-blood of legitimate business enterprises, inflicting upon society a species of distempered mental leprosy, which will require years to remove. This gigantic work of undermining the best interests of society is being accomplished by a monster that seeks to hide behind the mask of a State charter a visage more hideous than that of the veiled prophet.

Finally, it is insisted for the company that it has a vested interest in letters arriving at this office to its address, and that the action of the department in withholding them amounts to confiscation, and that, too, without due process of law. This argument, however, if good for any purpose, is based upon the assumption that the letters in controversy do not concern the lottery, and are therefore legitimate mail matter. It is only in case of matter entitled by law to be sent through the mails that the party addressed can acquire any interest in it by reason of its having been sent through the mails or deposited for that purpose. The postal authorities are not only not authorized to transmit these letters, but are positively prohibited from so doing, and the deposit in the post-office of these letters is forbidden, and in the absence of any statute on the subject, it would seem, on equitable principles, that the company cannot take advantage of its own wrong, and insist upon setting up a right acquired in violation of law.

The law not only declares that lottery letters shall not be carried in the mails, but denounces a penalty against any person who shall knowingly deposit or send anything to be conveyed by mail in violation of this section. In the transmission of legitimate mail matter, the government is the agent of both parties—the agent of the writer until the matter leaves the office of mailing, and thereafter the agent of the person addressed, except in extraordinary cases, when, for sufficient reasons shown by the writer, the Postmaster-General is authorized to stop the matter *in transitu*. But in the case of unmailable matter the government does not become the agent of either party, except as provided in section 3898 of the Revised Statutes, already referred to, which is as follows :

All letters, packets, or other matter which may be seized or detained for violation of law shall be returned to the owner or sender of the same, or otherwise disposed of, as the Postmaster-General may direct.

Under this statute, the writers of the letters in controversy have never parted with their property in them, so far as the lottery company is concerned, and are entitled by law to have them returned. It is no answer to say that the writers are not insisting on their rights; the law declares that the letters shall be returned or otherwise disposed of, as the Postmaster-General may direct, and does not consult their wishes in the premises. Having violated the law in sending them, they are not entitled to be heard to say what disposition the department may make of them. But whatever may be the equities of the writers, the disposition of these letters does not in any manner affect the rights of the company, for they have acquired no rights by the violation of the law.

If the government, in its efforts to protect the citizens against the immoral tendencies and ruinous results of lottery speculations, should return to him his property, which he had sought to part with in violation

PAPERS ACCOMPANYING THE

oes not rest with the company to complain. In me
ey lost at gaming may be recovered in an action ag
i this particular the complainant's charter may affo
inst the liability of the ordinary gambler, yet it is
the government to transmit its stakes or to exp
like charity, covering a multitude of sins) to
its transactions.

OF THE AUDITOR OF THE POST-OFFICE DEPARTMENT.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT
October 30, 1879.

ave the honor to submit the following annual rep
d expenditures of the Post-Office Department, toge
ons of this office in connection therewith, for the f
s 30, 1879.

COLLECTION OF POST-OFFICE REVENUES.

ber of post-offices in operation during the year w
lassified, under the regulations adopted for the ge
rtment, chapter 2, section 76, as follows: Special o
ices, depository and draft offices, and collection offi
owing-named offices are denominated depositories
are required by the Postmaster-General to receive a
the drafts of the department, the funds of certain
ell as the revenues of their own, viz:

J. H. Fee.	Iowa City, Iowa, Benjamin Owens.
W. H. Craig.	Jacksonville, Fla., H. Jay.
V. Mendell.	Jamestown, N. Y., A. M. Clark.
Benjamin Conley.	Kalamazoo, Mich., L. B. Kendra.
N. P. Clark.	Keene, N. H., A. Smith.
H. H. Hamlin.	Keokuk, Iowa, S. M. Clark.
H. B. Kinney.	Knoxville, Tenn., William Rul.
A. B. Farnham.	Lansing, Mich., S. D. Bingham.
William Tyrrell.	Leavenworth, Kans., D. R. Ant.
h., F. W. Dunham.	Lexington, Ky., H. K. Milward.
N. Y., E. B. Stephens.	Lima, Ohio, George P. Waldorf.
t., B. J. Derby.	Louisville, Ky., V. C. Thompson.
l., G. M. Mitchell.	Madison, Wis., E. W. Keyes.
. C., B. A. Roseman.	Malone, N. Y., J. J. Seaver.
io, N. B. Sherwin.	Marquette, Mich., S. M. Billing.
io, A. D. Rodgers.	Marshalltown, Iowa, E. Schurt.
l., J. E. Larkin.	Meadville, Pa., J. F. Morris.
a, A. K. Bailey.	Memphis, Tenn., A. D. H. Thom.
W. N. Byers.	Milwaukee, Wis., H. C. Payne.
owa, J. S. Clarkson.	Mobile, Ala., M. D. Wickersham.
., G. C. Cold.	Montgomery, Ala., I. W. Rober.
a, G. L. Torbert.	Montpelier, Vt., J. W. Clark.
Mich., T. Saylor.	Mount Pleasant, Iowa, G. W. M.
D. F. Pickering.	Nashville, Tenn., W. P. Jones.
id., F. M. Thayer.	Newark, N. J., W. Ward.
owa, N. M. Page.	New Bedford, Mass., T. Cogges.
Ind., F. W. Keil.	New Haven, Conn., N. D. Sperr.
s, Mich., J. Gallup.	Norwich, N. Y., J. K. Spaulding.
a., M. W. McAlarney.	Ogdensburg, N. Y., R. G. Pettib.
m., J. H. Burnham.	Olean, N. Y., M. B. Fobes.
ich., F. A. Douglass.	Omaha, Nebr., T. F. Hall.
., J. Richardson.	Peoria, Ill., J. S. Stevens.
la., J. D. Sibley.	Pittsburgh, Pa., G. H. Anderson.
Ind., W. R. Holloway.	Plattsburgh, N. Y., H. S. Ranso.

Portland, Me., C. W. Goddard.	Springfield, Mass., H. C. Lee.
Portsmouth, N. H., E. G. Pierce, jr.	Steubenville, Ohio, F. O'Neal.
Portsmouth, Ohio, F. C. Gibbs.	Syracuse, N. Y., A. C. Chace.
Providence, R. I., C. R. Brayton.	Taunton, Mass., E. E. Fuller.
Raleigh, N. C., W. W. Holden.	Terre Haute, Ind., N. Filbeck.
Richmond, Va., Wm. W. Forbes.	Towanda, Pa., P. Powell.
Rochester, N. Y., D. T. Hunt.	Urbana, Ohio, W. A. Brand.
Rutland, Vt., A. H. Tuttle.	Utica, N. Y., C. H. Hopkins.
Saint Albans, Vt., B. D. Hopkins.	Watertown, N. Y., W. G. Williams.
Saint Johnsbury, Vt., C. P. Carpenter, (2d).	Wellsborough, Pa., G. W. Merrick.
Saint Paul, Minn., David Day.	Wheeling, W. Va., Hugh Sterling.
Sandusky, Ohio, J. M. Boalt.	Williamsport, Pa., R. Hawley.
Savannah, Ga., L. McLaws.	Winona, Minn., D. Sinclair.
Scranton, Pa., J. A. Scranton.	Wooster, Ohio, P. C. Given.
Springfield, Ill., D. L. Phillips.	Worcester, Mass., J. Pickett.
	Zanesville, Ohio, W. S. Harlan.

The following officers receive and retain, subject to the warrants of the Post-Office Department, the funds of such post-offices as are instructed to deposit in their hands, viz :

The Treasurer of the United States at Washington, D. C.

The assistant treasurers of the United States at

New York, N. Y.	Cincinnati, Ohio.	Boston, Mass.
Baltimore, Md.	Saint Louis, Mo.	Chicago, Ill.
New Orleans, La.	Philadelphia, Pa.	San Francisco, Cal.

Ninety-nine post-offices are draft-offices, and during the year paid 23,350 drafts, issued by the Postmaster-General, countersigned, entered, and sent out by the Auditor, for sums in the aggregate of.....	\$2, 317, 247 33
Nine thousand one hundred and four are deposit-offices, a portion of which during the year deposited with the Treasurer and assistant treasurers of the United States the sum of.....	5, 119, 524 96
Thirty thousand four hundred and sixty-three offices are collection-offices and paid on collection-orders issued to mail-contractors the sum of.....	5, 080, 414 36
One thousand two hundred and forty-six are special offices, and derive their mail supplies by the payment of the revenue of their offices therefor, amounting to.....	36, 222 89
Four thousand six hundred and sixty post-offices are supplied by mail-messengers, for which service there was paid during the year.....	660, 476 97

REVENUE ACCOUNT OF THE POST-OFFICE DEPARTMENT.

The revenue of the department for the fiscal year ended June 30, 1879, was	\$30, 041, 982 86
The amounts placed in the Treasury for the service of the department for the fiscal year, being grants in aid of the revenue under the following acts of Congress, were—	
Under the second section of the act approved June 17, 1878, for supplying deficiencies in the revenues of the Post-Office Department for the fiscal year ended June 30, 1879	\$3, 000, 000 00
Under the act approved June 28, 1879, an additional sum for the payment of letter-carriers for the fiscal year ended June 30, 1879	71, 000 00
	<u>3, 071, 000 00</u>
Aggregate of revenue and grants.....	33, 112, 982 86
The expenditures of the department for the fiscal year ended June 30, 1879, were	33, 073, 437 82
	<u>39, 545 04</u>
Excess of receipts	
Amount charged to "bad debts" and "compromise" accounts.....	9, 771 53
Deduct amount credited to "suspense" account.....	1, 755 12
	<u>8, 016 41</u>
The balance available to meet accrued liabilities for the fiscal year 1879, is	31, 528 63

PAPERS ACCOMPANYING THE

commencement of the fiscal year 1879 there was a balance available for accrued liabilities, under appropriation for 1878, of..... \$116 34
 equal amounts have been placed in the Treasury on account of
 , as follows:

the act approved June 19, 1878 (private No. 205), for relief of H. G. Boardman, postmaster at Mil- Vermont	\$116 34
the act approved March 3, 1879, to supply a de- ficiency in the appropriation for transportation on roads for the fiscal year 1878	166,392 27

Total for 1878	3
of the last fiscal year there has been paid on account of 1878.....	1

Balance available for 1878	1
----------------------------------	---

commencement of the fiscal year 1879 there remained on hand a
 balance unexpended for 1877 of..... 2
 of the year there has been paid on account of 1877..... 1

Balance to be covered into the Treasury	1
---	---

The following amounts were placed in the Treasury for the purpose of
 to retain audited claims for services rendered during 1876 and
 :

act approved March 3, 1879 (deficiency).....	\$45,873 31
act approved March 3, 1879 (sundry civil) for relief of George H. Giddings.....	14,583 33

has been paid under said acts.....	\$
------------------------------------	----

Balance available for claims appropriated for.....	
--	--

SUMMARY OF REVENUES AND EXPENDITURES.

Revenue for 1879	\$30,000 00
from the Treasury for 1879.....	\$3,071,000 00
from the Treasury for 1878.....	166,508 61
from the Treasury for 1876 and prior years..	60,456 64
	3,2

Total receipts	33,3
Expenditures for 1879	\$33,073,437 82
Expenditures for 1878	143,018 72
Expenditures for 1877	173,132 71
Expenditures for 1876 and previous years.....	60,310 20

Total expenditures	33,4
--------------------------	------

Amount charged to bad debt and compromise accounts during	1
--	---

Excess of expenditures	1
------------------------------	---

Balance standing to the credit of the general revenue account at the close of the fiscal year ended June 30, 1878, as per last report, was.....	\$3,246,056 14
Less excess of expenditures during the year 1879.....	117,967 75

Balance to the credit of the revenue account at close of fiscal year ended June 30, 1879	3,1
by late postmasters, accounts in suit	\$245,694 47
accounts not in suit.....	233,037 01
	4

Balance due postmasters on accounts not closed	2,6
--	-----

2,6

DEFICIENCY APPROPRIATIONS.

The amount appropriated to supply deficiencies in the revenues for the fiscal year ended June 30, 1879, was:

General deficiency.....	\$1,222,274 72	
Deficiency in letter-carriers' appropriation.....	71,000 00	
Deficiency in railroad transportation.....	450,000 00	
		<u>\$4,743,274 72</u>
The amount placed with the Treasurer of the United States to the credit of the Post-Office Department during the fiscal year, being "grants from the Treasury," was.....		3,071,000 00
		<u>1,672,274 72</u>
The amount remaining to the credit of the deficiency appropriations, subject to requisition as deficiencies for 1879 appear, is		

The net revenues of the department from postages, being the aggregate of balances due the United States by postmasters on the adjustment of their quarterly accounts for the year, after deducting their compensation and the expenses of their offices, was:

For the quarter ended September 30, 1878.....	\$4,126,634 24
For the quarter ended December 31, 1878.....	4,657,954 39
For the quarter ended March 31, 1879.....	4,956,945 08
For the quarter ended June 30, 1879.....	4,532,632 84
Total	<u>18,274,166 55</u>

The amount of letter postages paid in money was:

For the quarter ended September 30, 1878.....	\$56,898 42
For the quarter ended December 31, 1878.....	53,571 14
For the quarter ended March 31, 1879.....	75,710 61
For the quarter ended June 30, 1879.....	68,721 24
Total	<u>254,901 41</u>

The amount of stamps, stamped envelopes and wrappers, newspaper and periodical stamps, and postal cards sold was:

For the quarter ended September 30, 1878.....	\$6,642,842 02
For the quarter ended December 31, 1878.....	6,961,539 49
For the quarter ended March 31, 1879.....	7,500,809 29
For the quarter ended June 30, 1879.....	7,039,884 19
Total	<u>28,145,074 99</u>

The amount of official stamps furnished the different departments and included in the above amount of stamps sold was:

For the Treasury Department	\$200,000 00
For the War Department.....	141,497 80
For the Navy Department.....	6,950 00
For the Interior Department.....	35,999 80
For the Department of Justice	3,620 00
For the Department of Agriculture.....	40 00
Total	<u>388,107 60</u>

The number of quarterly returns of postmasters received and audited, on which the sum of \$18,274,166.55 was found due the United States was:

For the quarter ended September 30, 1878.....	\$38,365
For the quarter ended December 31, 1878.....	39,605
For the quarter ended March 31, 1879.....	40,313
For the quarter ended June 30, 1879.....	40,369
Total	<u>158,552</u>

STATEMENT OF COLLECTING DIVISION.

Balance due United States brought forward from last report	\$498,563 92
Balance due United States on account of postmasters becoming late during the fiscal year.....	321,073 49
	<hr/> 819,637 41
Amount collected during the year.....	\$329,379 28
Amount credited to "suspense".....	1,755 12
Amount charged to bad and compromise debts	9,771 53
	<hr/> 340,905 93
Balance remaining due United States	478,731 48
Of which there is in suit.....	245,694 47
Not in suit.....	233,037 01
	<hr/> 478,731 48
Balance due late postmasters brought forward from last report.....	47,292 21
Amount becoming due during the fiscal year	32,722 77
	<hr/> 80,014 98
Amount paid during the year	33,764 28
	<hr/> 46,250 70
Amount in suit June 30, 1878	255,442 45
Amount submitted for suit during the fiscal year.....	12,865 45
	<hr/> 268,307 90
Of which there was collected during the year.....	16 261 69
Amount otherwise settled.....	6,351 74
	<hr/> 22,613 43
Balance remaining in suit	245,694 47
Amount collected from late postmasters on account of interest and costs .	3,310 02

ACCUMULATION OF VALUELESS FILES.

I have the honor to call your attention to the vast accumulation of accounts current, money-order statements, paid money-orders, and other papers in the files of this office, to which reference is never had, and which are occupying rooms very much needed for the current files.

I suggest that Congress be requested to grant to the Postmaster-General authority to destroy or sell as waste paper all returns, statements, and paid money-orders pertaining to the accounts of postmasters which have been finally settled and closed, and which have been in the files not less than ten years. The ledgers and registers of this office will show the accounts as audited, and all necessary information can be obtained from them, the papers above mentioned being the postmasters' returns to this office on which their accounts were audited and settled.

The accompanying tables, numbered from 1 to 31, inclusive, exhibit in detail the transactions of the department for the fiscal year.

I have the honor to be, very respectfully,

J. M. MCGREW,
Auditor.

Hon. D. M. KEY,
Postmaster-General.

Statement of the postal receipts and expenditures

States and Territories.	Letter-postage.	Waste paper and twine.	Box rents and branch offices.	Postage stamps, stamped envelopes and postal cards.
Alabama	\$1,478 43	\$80 33	\$24,548 68	\$451,372 36
Alaska	537 42	117 58	15,483 70	275,352 85
Arizona	472 60	92 74	11,221 83	251,063 44
California	10,762 98	1,250 00	112,837 25	1,962,577 98
Colorado	917 60	97 15	19,780 54	302,552 14
Connecticut	3,043 40	175 22	41,422 07	676,003 29
Delaware	66,721 89	3,340 33	175,070 42	5,465,178 11
District of Columbia	2,016 44	164 97	25,125 00	591,200 61
Florida	18,720 41	1,250 31	92,497 21	2,620,110 06
Georgia	205 84	15 00	1,537 11	72,304 02
Idaho	5,248 34	96 08	10,354 04	524,488 77
Illinois	2,352 62	57 38	11,727 40	435,488 67
Indiana	802 05	80 49	3,694 84	149,058 04
Iowa	946 98	30 02	8,681 04	211,212 83
Kansas	586 93	19 44	8,494 04	174,079 44
Kentucky	1,841 36	240 16	17,784 02	323,268 53
Louisiana	647 80	12 24	5,135 74	87,032 80
Maine	7,975 70	1,137 38	81,817 00	1,865,000 09
Maryland	5,257 82	374 30	64,582 41	994,072 56
Massachusetts	3,037 02	425 04	46,370 44	778,999 25
Michigan	22,622 07	2,130 04	105,720 72	2,208,248 30
Minnesota	3,205 11	304 19	40,731 00	688,139 40
Mississippi	3,875 58	826 74	66,939 50	860,213 08
Missouri	9,917 30	697 30	32,441 23	1,081,490 00
Montana	2,740 16	183 25	10,759 48	432,079 56
Nebraska	2,068 37	117 70	10,623 41	315,894 88
Nevada	1,274 34	41 49	11,620 96	254,576 16
New Hampshire	716 21	37 00	12,585 35	162,207 17
New Jersey	470 05	38 27	9,078 75	144,504 98
New Mexico	2,934 57	50 15	18,611 05	268,117 00
New York	3,963 50	108 58	43,604 38	458,939 13
North Carolina	7,170 68	220 70	66,686 89	800,151 54
North Dakota	203 53	48 00	11,616 29	112,770 70
Ohio	4,280 96	152 07	20,864 60	414,861 93
Oklahoma	1,639 70	184 59	32,310 40	476,172 68
Oregon	1,307 27	60 60	15,268 02	237,442 06
Rhode Island	885 16	21 90	13,812 28	80,763 45
South Carolina	955 93	149 00	28,346 06	192,673 62
South Dakota	317 34	41 48	5,778 51	74,550 06
Texas	10 14	9 80	1,501 75	10,306 34
Vermont	78 50	4 17	3,137 12	39,209 37
Virginia	207 50	13 46	6,247 52	74,735 99
Washington	89 06	41 58	1,993 40	21,204 90
West Virginia	33 80	16 17	1,006 98	22,700 31
Wisconsin	73 20	3 14	2,934 35	27,192 70
Wyoming	54 08	18 30	6,184 48	37,999 48
Yukon	06	-----	-----	53 43
United States of Columbia	3,870 57	200 40	5,054 74	183,510 10
Total	208,048 15	14,036 01	1,380,803 84	27,758,812 04
Net miscellaneous items	46,253 26	-----	358 87	350,202 05
Total	254,001 41	14,036 01	1,381,162 71	28,109,014 09

NOTE.—The following items of expenditure and revenue, being of a general nature, are not paid for foreign mails and expenses of government agent
 , steamboat, and way letters
 printing paper
 route maps
 printing
 -bags and catchers
 ry per diem of assistant superintendents of the postal-railway service
 locks and keys
 marking and canceling stamps
 depredations and special agents
 ex-balances
 ences of postage-stamps, stamped envelopes, and postal cards
 l letters, official and registered package envelopes
 xellaneous and sundry payments
 res of expenditures brought down

Amount transferred to postage fund	\$663,820 93
Amount deposited at first-class offices.....	74,785,472 94
Amount paid for incidental expenses.....	63,309 44
Amount paid for commissions and clerk-hire	550,655 85
Miscellaneous items	7,196 66
Balance in hands of postmasters June 30, 1879....	1,203,036 49
Total.....	\$166,760,029 45

J. M. McGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT,
Washington, D. C., October 30, 1879.

Statement showing the revenue which accrued on domestic money-order transactions for the fiscal year ended June 30, 1879.

Amount of fees received on orders issued	\$798,625 65
Amount received for premiums, &c.....	721 44
	799,347 09
Amount paid for commissions and clerk-hire.....	\$512,550 52
Amount paid for expenses, viz: Salary and ex- penses of—	
Special agents.....	\$19,487 47
Lost remittances	4,364 50
Bad debts.....	26,524 54
Incidental expenses	12,459 29
	62,835 80
Net revenue.....	223,960 77
	799,347 09

J. M. McGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT,
Washington, D. C., October 30, 1879.

Weight of letters and newspapers, &c., sent from the United States to European countries during the fiscal year ended June 30, 1879.

J. M. McGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT, October 30, 1879.

Amount transferred to postage fund	\$663,820 93
Amount deposited at first-class offices.....	74,785,472 93
Amount paid for incidental expenses.....	63,399 44
Amount paid for commissions and clerk-hire	550,655 85
Miscellaneous items	7,196 66
Balance in hands of postmasters June 30, 1879.....	1,293,036 49

Total..... \$166,760,029 45

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT,
Washington, D. C., October 30, 1879.

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J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT,
Washington, D. C., October 30, 1879.

Weight of letters and newspapers, &c., sent from the United States to European countries during the fiscal year ended June 30, 1879.

Countries.	Letters.	Newspapers, &c.
	<i>Grams.</i>	<i>Grams.</i>
United Kingdom of Great Britain and Ireland.....	40,343,309	212,327,073
Germany.....	26,653,520	98,837,730
France.....	9,111,895	39,890,167
Italy.....	2,702,372	15,526,920
Belgium.....	960,952	3,875,226
Denmark.....	1,152,135	3,125,491
Netherlands.....	1,326,338	4,601,933
Switzerland.....	2,031,414	9,742,606
Spain.....	750,667	4,678,317
Sweden.....	2,277,275	6,571,952
Norway.....	2,048,090	4,026,742
Total	95,284,187	403,213,157
Increase, compared with last fiscal year.....	5,009,600	16,742,571

J. M. MCGREW, Auditor.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT, October 30, 1879.

ment showing the receipts of money by postmasters during the fiscal years 1878, and the amount of losses by defalcation, etc., during the same period.

OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT
November 1

Statement showing the receipts of the Post-Office Department for two years ending June 30, 1878, and the amount of bad debts and suits during the same period. The number of post-offices during the two years was from thirty-nine thousand to one thousand.

Receipts from ordinary revenues.....	\$56, 8
Receipts from sale of money-orders.....	158, 1

Total amount received by postmasters during the two years...	214, 9
--	--------

Unpaid bad debts.....	
Unpaid compromise debts.....	
Money-order bad debts.....	

Total compromise and bad debts.....	
-------------------------------------	--

Unpaid accounts remaining in suit.....	
Money-order accounts remaining in suit.....	

Total in suit.....	
--------------------	--

More than one-half of the amount in suit will be finally collected, but, if the whole amount is uncollectible, the per cent. of loss is .0046+, or less than one-tenth of one per cent.

J. M. MCGREW, Auditor.

REPORT
OF
THE COMMISSIONER OF AGRICULTURE,
FOR THE YEAR 1879.

SIR: I have the honor to transmit this my third annual preliminary report of the agricultural condition of the country and of the work in hand and accomplished by the department during the past year.

At this time I recall with satisfaction the encouragement you gave when I assumed the duties of Commissioner to the proposed attempt to stimulate the manufacture of sugar from any and every source, so that the production within the boundaries of our own country should at least equal the home consumption. Reporting progress as the result of the efforts of this department in this direction, it is not too much to say that the success attending the manufacture of cane-sugar from sorghum and maize will mark the year 1879 as an important epoch in the agricultural progress of our people.

With the knowledge that during the past summer and fall sugar of good quality has been profitably made from Texas to Northern Minnesota from the "Minnesota early amber" cane (the seed of which was widely distributed by the department;) that sirups weighing 12 pounds to the gallon, at least one-half of which was crystallizable cane-sugar, was made and can be again made in nearly every State in the Union by farmers with ordinary and inexpensive machinery at a cost of 16½ cents per gallon, and with the knowledge that by means of larger and better appointed mills, that need not cost to exceed \$10,000, sugar and sirup have been made the past season from sorghum by the car-load, which commanded the highest market price; it is not too much to assert, that, as a result of the work of this department, which has constantly before it the duty of accomplishing all that may be done to increase or multiply those products of the soil which constitute the wealth and sustain the manufactures and commerce of the country, a new industry has been fairly established, the importance and significance of which it is difficult to realize. With this and a knowledge of the work of the division of chemistry during the past season (a short statement of which will form part of this report), I am warranted in asserting that it has been finally and practically proved that one of the most important, expensive, and indispensable requisites of modern life can be profitably grown where heretofore it was supposed not possible to produce it; that it can be manufactured in quantities sufficient to meet any

demand likely to occur, at a remunerative rate even if the price should fall one-third below what it now is, and that the smallest farmer as well as the largest planter can profitably engage in its production; and this in no limited area of country, but in whatever place maize can be grown successfully; for there sorghum of some variety will grow, and it will flourish and mature its juice and seed in much of our soil in which maize is by no means a certain crop.

Several attempts to make sugar from beets in Illinois, Wisconsin, and California having been abandoned as unprofitable, and all attempts to make a merchantable sugar from sorghum having failed up to 1877, it became a settled opinion that only from tropical cane and the sugar maple could sugar be profitably made in the United States. The maple groves found scattered along a narrow strip of our northern border were and are fast disappearing, and the amount of sugar, at any time not very large, was in the census of 1870 reported at 28,443,645 pounds, and the molasses at 921,057 gallons.

It is now less, and is an inconsiderable factor in the problem. The manufacture of sugar from the tropical cane was confined to a narrow belt of country bordering the Gulf of Mexico, which produces an amount of sugar averaging for twenty years past 1,600 pounds per acre. The total production of this strip last year was about 250,000,000 pounds, while our importation from abroad was 1,741,650,000 pounds of sugar, beside molasses, melado, and other forms of sucrose, and being about 300,000,000 pounds increase over the importation of 1877-'78 (fiscal year).

The Department of Agriculture has done what was possible to encourage the production of sugar from the tropical cane as well as from beets and other plants, and there has been a large increase in area and in production of sugar from this source during the past two years; but the increased demand has far outstripped the increased production.

The consumption of sugar per capita of our people is about 40 pounds per annum at present, and with cheap, pure, healthful home-grown sugars the consumption per capita would increase to 60 or 80 pounds.

Fifty millions of people would consume at 60 pounds each, which it is said the English people consume, annually 3,000,000,000 pounds of sugar, worth at 6 cents \$180,000,000, or at 10 cents, which is the price at which the Crystal Lake sorghum sugars of Weidner & Co. were sold this year, \$300,000,000.

In reflecting upon this sugar problem, some two years since, it appeared to me that many years must pass before we could hope for a full supply of sugar from tropical canes grown on our own soil. The broken levees of the Mississippi River must be rebuilt, and the ruined plantations restored; the demoralized labor system of the South reconstructed and the disheartened land-owners encouraged; the mechanical must be, in part, divorced from the agricultural interest, and a co-operation of labor and capital must be established with confidence restored, before any very great and permanent increased production of sugar could be

looked for from the cultivation of tropical cane. Then again the plant itself belonged to a tropical country, and refused to ripen its seed in Louisiana, never even maturing the whole extent of stalk grown.

All these considerations combined to make a discouraging outlook for the home production of sugar from tropical cane within a period of time which would afford any relief to the then depressed condition of our industries.

It was with much gratification, therefore, that I first saw a specimen of well granulated sugar made from sorghum, and exhibited at the Minnesota State Fair.

After a thorough examination of the attempts to produce sugar from sorghum in this country, and also after a chemical examination in the laboratory of the juice of this particular plant, it became apparent that this was a probable source of the immediate production of this much-desired article.

The first stalks of sorghum ever grown in this country, so far as I am informed, were planted by the Curator of the Botanical Gardens. This seed was obtained from Paris, as was also the seed which the Agricultural Department first distributed in the year 1856.

A more effective distribution, however, was made by the enterprising editor and proprietor of the American Agriculturist, Mr. Orange Judd, who sent out 25,000 packages of seed to the subscribers of his paper. In 1857 Mr. Leonard Wray came from England and brought with him sixteen varieties of African imphee or sorghum, which were planted in South Carolina and Georgia. Sorghum was thus introduced and was largely grown in almost every State in the Union. During the war of the rebellion it was particularly valuable to the people of the Southern States, and was the only adequate means of obtaining their "sweetening." Isolated attempts were made in Ohio and elsewhere to granulate the juice of the varieties then in cultivation, but without such success or profit as would warrant a continuation of the efforts. In no instance did the result seem to be satisfactory, and the raising of sorghum was nearly abandoned in Ohio, and in other States was only cultivated for the sirup. When the discovery was made that the juice of the "Early Amber" cane seemed to be more pure than of others, and would, with careful attention, deposit a large amount of its sucrose in granular form, the department determined to make so far as possible a thorough examination of the different varieties of sorghum and test their relative merits and value as sugar-producing plants. This inquiry has been patiently and carefully followed from the season of 1877 to 1879, and the results have been eminently satisfactory, as will appear in remarks upon the work of the Chemical Division. It is sufficient to say in this place that the value of the work done during the past year by this division can not be overestimated.

Mention had been made, and it had been recorded and mostly forgotten, that sugar was obtainable from corn, pumpkins, melons, and other vegetables, but no thorough, careful, persistent experiment seems ever to have

been made (if we except that of Mr. F. L. Stewart, who was found among the mountains of Pennsylvania at work for some years in this direction under discouraging circumstances), having in view the determination of the commercial value of these and other plants, until this task was assigned to the Chemical Division of this department in 1878. In a letter from Abigail Adams to her husband, John Adams, September 24, 1777, she says:

An instance may be seen in the progress which is made in grinding cornstalks and boiling the liquor into molasses. Scarcely a town or parish within forty miles of us but what has several mills at work; and had the experiment been made a month sooner, many thousand barrels would have been made. No less than 80 have been made in the small town of Manchester. It answers very well to distill, and may be boiled down to sugar. There are two mills fitting up in this parish. They have three rollers—one with cogs and two smooth. The stalks are stripped of the leaves and tops, so that it is no robbery upon the cattle, and the juice ground out. 'Tis said four barrels of juice will make one of molasses, but in this people differ widely. They have a method of refining it so that it looks as well as the best imported molasses.

The following is an extract from the work of David Lee Childs on the culture of the beet and manufacture of beet-sugar:

Other plants usually grown in our soil are capable of furnishing sugar, and some of them may be found worth cultivating for that and accessory products.

We have tried Indian-corn stalks and the pumpkin, and have obtained from them good sugar and molasses.

Perhaps these crops may alternate advantageously with the beet. If the manufacture of sugar from the stalks of Indian corn can be reconciled, as we believe it may, with the maturity or near maturity of the ears, this source of saccharine may supersede the beet-root. The seeds of the pumpkin yield a fine sweet oil, but we have no means of judging what quantity of this product can be obtained from a given extent of land. If it should turn out satisfactorily in this respect, the pumpkin may one day overshadow the sugar-cane.

Here was the opportunity and it was at that time the duty of the government to assume the risk of failure and the expense and care of such scientific analyses and experimental trial as would have exhausted all resources before giving up even the hope of securing success in the profitable production of sugar, and thus retaining at home the millions of money that have since gone out to sustain and enrich other nations. The work that should have been done then has been undertaken now, with such imperfect means as were furnished; and notwithstanding the ridicule of the thoughtless, and the fears of hopeful friends, it has been steadily pushed forward to a satisfactory conclusion.

Many persons are preparing to imitate the example of F. A. Weidner & Co., of Chicago, and erect mills the coming season with vacuum pans, and centrifugal driers in which the work will be done by steam and of capacity sufficient to make a ton of sugar each day of twenty-four hours' work. Mills of this capacity will be needed in every county where sorghum is grown, and will not only be employed in the harvest season in milling the stalks of sorghum and corn direct from the field, but will also after harvest and during the winter take the product of the small open-pan mills (sirups weighing 8 to 12 pounds) and rework that in the vacuum pan and centrifugal, making sugar and sirup for the market.

CHEMICAL DIVISION.

The work accomplished in the Chemical Division up to the 27th of May, 1879, was included in the annual report for 1878. From that date to the present time there have been made—

First. Ninety-one miscellaneous analyses, including soils, waters, fertilizers, clays, ores, marls, and other mineral substances.

Second. Thirty approximate analyses of various food and medicinal materials.

Third. Two hundred and seventy-four analyses of various sugar-yielding plants and their juices.

Fourth. Five experiments in alcoholic distillations from the refuse of sugar-manufacture, and twenty-eight experiments in making sugar from various sugar-yielding plants—in all thirty-three.

The experiments entered upon for the purpose of determining the amount of sugar in the juice of the several varieties of sorghum, of the stalks of maize and of pearl millet, give results which enjoin their earliest possible publication that they may reach the farmers for their instruction before the time for the spring planting arrives.

A fair conclusion from these investigations appears to be that there exists but little difference between the various kinds of sorghum as sugar-producing plants, and that the juice of each of them is at a certain period of its development nearly as rich as that of the best tropical sugar-cane grown in this country.

It is a matter also of extreme practical importance that it should be known that this period of maximum content of sugar is maintained for a sufficient time to enable the manufacturer to work up a large crop of stalks. Another result of this investigation has been to satisfactorily explain the cause of repeated failure in the production of sugar from certain plants during the past quarter of a century.

For the purpose of making clear the above points, a few of the results obtained by the chemist are appended. The varieties of sorghum canes subjected to this investigation were "Early Amber," "White Liberian," "Chinese," "Honduras," and "Pearl Millet."

	Development of plant.	Date of analysis.	Per cent. of water in stalk.	Per cent. of juice obtained.	Per cent. of sucrose in juice.
Early Amber	Seed-head just out.....	July 18	82.70	34.8	4.43
	Seed hardening	Aug. 16	80.67	32.7	14.67
	Seed ripe, hard, dry. . .	Sept. 10	73.20	32.0	15.85
	After hard frost	Oct. 20	60.38	33.3	17.00
Chinese	Seed-head just out.....	Aug. 6	83.99	32.7	1.85
	Seed hardening	Aug. 10	78.77	29.9	6.45
	Seed ripe, hard, dry....	Sept. 13	71.27	28.1	12.99
	After hard frost	Oct. 29	60.51	31.0	13.13
White Liberian	Seed just in milk	July 26	79.32	38.5	4.70
	Seed nearly ripe	Aug. 26	71.34	29.6	13.70
	Seed ripe and hard.....	Sept. 27	71.00	21.2	15.20
	After hard frost	Oct. 29	60.06	28.8	13.00

cane sugar present equal to 90.1, a loss of 9.9 of the amount originally present in the juice.

This very satisfactory result, showing as it does conclusively the possibility of securing from the juices all the cane sugar present without a loss of more than 7 to 10 per cent., is of great importance in view of the fact that all these juices were evaporated in an open pan. A few of the experiments made give a reasonable basis for estimating the probable yield of sirup and sugar to the acre, and therefore an approximate estimate of the cost of producing sugar.

Below is the tabulated result of a few of the experiments from stalks grown upon the grounds of the department.

These stalks were grown in rows three feet apart, twelve to fourteen inches in the row, and although a good crop, there is no doubt that upon good land an equal yield to the acre could be readily obtained.

	Pounds stalks from acre.	Sirup obtained.	Sirup, juice at best.	Sirup, juice, 70 per cent.
Chinese sorghum	38,600	2,096	2,397	3,673
Liberian sorghum	33,727	2,472	2,609	3,783
Early Amber sorghum	32,415	2,100	2,615	3,661
Honduras sorghum	66,151	3,652	5,168	7,537
Pearl millet	65,000	1,846	3,128	4,865
Field corn	27,240	1,166	.....	1,807

The first and second columns give the result actually secured, but the several juices were not in their best condition as compared with the results given in the first table. The third column is the amount which this same weight of stalks would have yielded had they been cut at the proper time. The juice obtained from the stalks by the imperfect means at the command of the department was a little more than one-half of the amount present in the stalks. The fourth column represents the results obtainable by the use of a mill that would have given 68 per cent. of the juice, a result which is possible and claimed as common by the manufacturers of the mills. There is no doubt that when the present industry shall have received the employment of the capital and scientific ability which has developed the beet-sugar industry, even these results, which may appear extravagant to many, will be equaled and probably surpassed.

Although as has been stated these sirups were obtained from stalks in which the maximum content of sugar had not been developed, yet they all crystallized well and yielded an excellent article of sugar.

The sugar has been separated from the Chinese sorghum sirup, which gave 54.7 of sugar, nor from the field corn, which gave 39 per cent. of sugar.

The experiments with field corn are worthy of special notice, since the results secured are not only most surprising, but contrary to almost universal belief.

The corn-stalks were of three varieties, viz., Lindsay's Horse Tooth, White Improved Prolific, and White Dent, three coarse-growing white field corns. The stalks grew in drills three feet apart and about nine or ten inches in the row.

The ears were plucked after they had thoroughly ripened and the husks were dead and dry; the stalks, however, were yet juicy. The corn was plump and sound and yielded at the rate of 69.1 bushels of shelled corn, fifty-six pounds to the bushel, to the acre. The stalks were then topped, stripped, and crushed, and the juice proved to be the best yet obtained from corn-stalks at any period of growth or of any variety. It is exceedingly to be regretted that this department had not during the past season an opportunity to try these experiments in the large and practical way of field cultivation which would have been befitting the importance of the occasion. Not less than an acre, and preferably five acres, of each variety of sorghum and maize experimented with should be grown and its developments should be watched carefully with the aid of all the appliances of science, throughout the season and worked up at the proper time with the best machinery attainable, and it is hoped that a matter of so much importance will receive such attention at the hands of Congress as will enable the department to properly discharge its duties to the country in this regard.

With the present grounds and laboratory force at the command of the department this is impossible. The correspondence upon matters pertinent to the Chemical Division has increased so largely that with the present force it is impossible to give it the attention which it demands. The amount of work which has accumulated in advance of the means to accomplish it shows how promptly and gladly our people would avail themselves of the advantages which a proper enlargement of the division would afford. The legitimate work which has already accumulated and which is mapped out for the Chemical Division would employ the present force for years.

ENTOMOLOGICAL DIVISION.

On the retirement of Prof. C. V. Riley, May 1st, the department was fortunate in obtaining the services of Prof. J. H. Comstock, of Cornell University, concerning whom the President of the university, Hon. Andrew D. White, wrote:

He seems to me in every respect fitted to discharge the duties usefully to the public service and satisfactorily to yourself. He has most thorough scientific attainments, great energy, pleasant address, excellent temper, and is certainly destined soon to be a recognized authority in his department throughout the world as he now is over a considerable part of this country. Nothing but a sense of duty to him leads me to write this letter. * * * As it is, I hope to reclaim him some day. As to character, temper, relations with scientific people, he is all that could be desired.

It is sufficient to say that Professor Comstock's studies have fitted him for the position, and under his direction the Entomological Division has made notable advance in its appropriate investigations, and thus far the high recommendation of President White has been entirely sustained.

The work of the Entomological Division during the year may be classified under four heads :

1. Finishing the investigation of insects injurious to the cotton plant, begun last year under special appropriation of Congress, and preparing an extended report upon its results.

2. Rearing to the perfect stage new or little known injurious insects for the purpose of gaining a knowledge of their habits and transformations which shall facilitate the suggestion of remedies.

3. The conducting of an extended correspondence relative to noxious insects.

4. The raising of different varieties of silk-worms with a view of experimenting: first, upon the most approved methods of rearing; and, second, upon food-plants, carefully comparing the Osage orange with the different varieties of mulberry. Also the distribution to all applicants.

The investigation of insects injurious to the cotton plant has been completed. Professor Comstock, having been engaged in this investigation from its beginning, was able to take charge of it without material loss of time. A trained observer was sent into the field early in May, where he remained until the middle of September, carrying on extensive experiments upon remedies and clearing up mooted points in the life histories of the cotton-worm and the boll-worm.

Work on this report has been rapidly progressing, and it is hoped and believed that the facts therein contained will enable the Southern planters to render these enemies to their staple crop sources of much less damage than heretofore.

As regards the rearing of new or little-known injurious insects, the division has studied since May 1 the following :

	Species.
Of insects infesting the apple	17
peach	7
orange.....	5
pear	2
grape.....	11
raspberry	1
strawberry	1
corn	3
cabbage	3
melon	1
tobacco.....	1
grasses	9
clover	36
pine	16
locust	15
oak.....	13
maple	3
miscellaneous shade-trees.....	15
Museum pests	7

Many of these insects are treated of in the annual report of the entomologist. Others will require the additional study of another season,

and the succeeding report will contain accounts of the observations. Insects injurious to agriculture are constantly making their appearance either through importation or by the sudden acquisition of destructive habits by species before considered innocuous; hence this branch of study requires of the division much time and attention.

The correspondence of this division has increased greatly during the past six months, and it is entirely beyond the power of the clerical force of the division to give that prompt attention to inquiries upon the subject of insects injurious to agriculture that come from all parts of the country.

During the latter part of last winter, twenty ounces of imported silk-worm eggs, the majority from Japan, and the rest purchased from reliable French dealers, were distributed among some fifty persons desirous of commencing silk culture. The reports so far received seem to demonstrate, beyond a doubt, the possibility of the successful culture of silk in almost every part of the country. Unskilled persons have, with the help and advice of the department, in nearly every instance brought a large proportion of the worms successfully to the spinning point.

Experiments conducted during April, May, and June, 1879, confirm the opinion that Osage orange is but little inferior to *Morus multicaulis* as silk-worm food; and the demonstration of this fact necessarily enlarges the possibilities of the industry in this country.

A correspondent writing from Bengal, India, and who has served an apprenticeship at silk raising in that country, with an additional experience of five years in the business, makes a proposition to the department to transport and acclimate the "Tusser" silk worm in the proper latitudes of this country, to the extent of one thousand pounds of cocoons, at a cost of about \$550,000. This species of worm is indigenous to the province of Assam, in Bengal, where the British Government is giving much attention to silk culture, and is of a hardy nature and a most prolific spinner. The writer says: "If America can only secure to herself a fair start now in the 'Tusser' industry, she will add vastly by it to her manufacturing revenues." If furnished the means of naturalizing his favorite "Tusser" worm in America, he thinks success is certain. He adds, "With the Tusser worm fairly fixed in your vast continent, you might snap your fingers at all the silk-producing countries in the world."

While I cannot recommend the beginning of operations on so large a scale, the above is cited to give an idea of what persons of intelligence and experience in other countries are doing in silk culture, and would do to establish it here if encouraged. And it is believed this great industry may, by careful procedure, be gradually and economically established in many portions of the United States, with vast benefit to the inhabitants.

An entire reorganization of the entomological collection has been begun. A supply of new cases has been procured, and the collection is

being put into such form as shall best insure its preservation and accessibility.

Whenever, during the year, word has been received of any insect irruption of particular interest, an assistant has been sent to the spot to make observations, or a local observer has been employed, to insure a thorough investigation of causes and a more intelligent suggestion of remedies.

In addition to the usual work of the Entomological Division during the next season, a series of experiments will be instituted for the purpose of utilizing the knowledge obtained in applying remedies of various kinds. The results, with all known facts, will be collated into an accessible form for general distribution. This will be a work of considerable magnitude; but it is one which, if well done, will prove of the greatest benefit.

At present, what is known about remedies is scattered through the great number of published volumes and agricultural periodicals. Much of it is doubtless valuable, and much is worthless. It is proposed to critically try, so far as is possible, all of the more important remedies, and to publish in compact form the results.

The habits of and remedies for insects injurious to the orange will be made a special study. The numerous communications received from orange-growers in California and Florida upon this point during the past year have revealed the fact that here is an almost unexplored field to the economic entomologist, and that it is of the greatest importance that some earnest and intelligent work, backed by sufficient means, should be done in this direction at once.

It is designed to resume and continue upon a large scale the biological collection begun in 1876 and discontinued since then, which shall illustrate, when completed, the natural history and habits of all of the injurious insects of the United States; and also to make small biological collections, illustrating our more common injurious insects, for distribution to the agricultural colleges throughout the country, so far as the appropriations will admit.

The division has never been better prepared to do efficient work than at present; but several assistants and an additional clerical force are necessary to meet promptly the increased demands for information.

STATISTICAL DIVISION.

The arduous work of this division has been most vigorously prosecuted by the small force now at its disposal.

As will be observed by reference to the detailed report of the statistician, it has a very large and rapidly increasing correspondence, both foreign and domestic.

The number of correspondents is now considerably in excess of four thousand. They have been selected with an eye to their intelligence, experience, and general fitness for the duties which devolve upon them. Most of their communications consist of replies to queries propounded

by the department. These are first verified by the statistician by comparison with the most reliable data attainable from other sources, then classified and arranged in the tabulated form which the numerous accompanying tables present. Those relating to the growing crops are first compiled for issue in the Monthly Bulletin of the department. This is prepared by this division and widely disseminated through the mails and through the daily and weekly press, which are furnished with early copies. These crop reports, and, indeed, all the statistics of this department have become necessary not only to the producing agriculturists, but also to the middlemen and consumers, and under the untiring and careful supervision of the statistician and his painstaking assistants, are becoming noted for that accuracy which should characterize all statistical work. The labor involved is not only arduous, but of an intricate character. It requires discretion, judgment, and experience. It cannot be intelligently performed by novices, nor will it do to intrust it to those of careless or negligent habits, because slight errors in the calculations might prove injurious to some of the most important interests in the country. A liberal increase in the force of this division is very desirable. Each addition to the list of correspondents adds to the labor of the division and also augments the value of the crop reports in accuracy and reliability.

The frequent applications made to the department for statistical information by agents of foreign governments, by merchants, and by members of Congress, have all been promptly met in a satisfactory manner by the facts and figures collected and recorded.

The collection and tabulation of such statistics of European production as bear on our own markets have been made a subject of special care. The contrast presented as illustrated by these interesting and instructive tables will well repay the study necessary to digest the information conveyed.

Investigations regarding the "wages of labor" and the "value of farm lands" have been instituted and considerable progress made in their prosecution; but, owing to pressure of other duties and inadequacy of force, the work was necessarily suspended during several months.

As the value of farm lands is largely dependent on the price of labor for their productive cultivation, the average wages of labor becomes an important factor in successful agriculture as well as in the present and prospective money value of farms. It is clear that the taxes on an unproductive farm would soon consume its value. As production is impossible without labor, the cost of the latter becomes a vital point with the agriculturist. It will be possible to pursue these interesting investigations in a more thorough manner, and lay the results before the country in such a way as will, it is believed, be productive of many benefits, if the bill entitled "A bill to encourage inter-State migration," introduced by Hon. W. F. Sapp, of Iowa, at the second session of the

Forty-fifth Congress, and which, so far as known, was warmly approved of by members of Congress, shall become a law.

The report of crops for the year presents the same gratifying aspects as that of last year. Although the yield per acre in some instances is below that of 1878, the increase of area more than compensates for the declining average. As a whole, the wheat crop of the country is unprecedented in yield, being within a small fraction of fourteen bushels to the acre. The increase in area, some 2.3 per cent., is not so large as that reported last year. In the great wheat-growing States of the Northwest the same climatic influences that were so detrimental in 1878 were again felt this year, and the yield per acre in these States the present year shows little variation from that of its predecessor; while in the States contiguous to and bordering upon the Ohio River, but in which winter-sown wheat prevails, there was an extraordinary product. In the State of Indiana the yield was increased from sixteen bushels per acre to twenty and three-tenths. In fact, the crop in all the country was above the average, except in Texas and Kansas. California had a good crop, but not as large as in 1878. The acreage of corn was increased this year about three per cent. Drought in the South Atlantic and Gulf States was detrimental, but in those States bordering on the Ohio and Mississippi Rivers the season was favorable, and the yield was very large. The total product of corn in 1879 is some two hundred million bushels more than in 1878. This result is remarkable, as it is the fifth consecutive year of abundant crops.

The cotton crop, which is so important in its bearing on the prosperity of the country, because it furnishes one of the chief articles of foreign export, shows a slight decline from the yield of last year. As compared with 1878, which was the year of the largest production, the deficit will be, in round numbers, 290,000 bales.

In the product of other important crops there is no material change, except that the short yield of potatoes in 1878 is replaced this year with a full crop. Full details of the aggregate production of each of the principal crops, together with area planted and the estimated value of the same, will be found in the statistician's annual report.

His tables afford much general information useful to the thoughtful farmer in the handling and marketing of his crops. The average-price table, showing the difference in value between the market nearest his farm and in New York, Philadelphia, Baltimore, and Boston, acquaints him with the average cost of transportation, insurance, and commission from the point of production to that of consumption. The wages table is very instructive. It shows that ordinary farm-labor commands most in New England, where education is universal, and the laborers are consequently intelligent. This advance may be considered a premium on intelligence. In the South and West, while farm-labor is lower, being generally uneducated, that of the intelligent mechanic is considerably higher than it is in New England. This again may be considered

premium on educated labor where that commodity is scarce. A careful examination of the wage-tables and of the price-list of breadstuffs and provisions in the different sections of the country will enable labor to determine where toil is best rewarded, after deducting the cost of subsistence.

BOTANICAL DIVISION.

The following inquiries concerning the botanical collection of the Department are sometimes made: What are they? What are their uses? and what are their needs?

The botanical collections consist of prepared specimens intended to represent every species of plant, shrub, or tree growing in the United States, and to some extent, also, the vegetable productions of foreign countries. They include also definite and authentic specimens from the forest woods and the more important fruits, cones, and seeds. The foundation of this herbarium was laid by the numerous collections made at different times by the government expeditions, as the expedition to Japan under Commodore Perry; the North and South Pacific expeditions, Commodore Wilke's expedition, the Mexican boundary expedition, and the Pacific Railroad surveys.

The botanical collections made by most of these expeditions, and properly investigated and described by those distinguished American botanists, Doctors Torrey and Gray, were deposited with the Smithsonian Institution until the year 1869, when an arrangement was made between the Secretary of that Institution and the Commissioner of Agriculture by which the botanical collections were transferred to the Department of Agriculture, and committed to the care of a properly-qualified botanist connected with the department.

This arrangement was entered into for two purposes: first, the Agricultural Department needed the services of a botanist to give answers to critical questions which were continually arising as to the natural qualities of certain plants which attracted the attention of agriculturists in various parts of the country; and, secondly, the large and important botanical collections of the Smithsonian Institution could be made practically useful without the employment for a number of years of a competent botanist to arrange and classify them, and make them available for purposes of study and reference. The opportunity thus presented itself of uniting the practical wants of the Department of Agriculture with the interests of science and education fostered by the Smithsonian Institution.

Since the transfer above mentioned large additions have been made by the recent government surveys, by some purchases, and by exchanges with foreign governments. The herbarium has been removed to more commodious rooms, and many new cases have been provided, so that all the specimens are easy of access and measure and displayed.

This collection, like all museum collections, has an educational character. The rooms of this division are visited by thousand of persons, who have the opportunity of examining the vegetable productions of the country, and to some extent comparing them with those of other countries. Very few of these visitors will fail to gather some items of information which will be a source of pleasure and instruction to them, will be diffused by them, and thus have a beneficial influence on the popular intelligence.

The department receives from foreign nations by way of exchange and otherwise many valuable specimens of woods and plants, which are arranged, verified, and classified by the botanist of this division; duplicates are distributed to State agricultural colleges and other institutions of learning, not only of these, but also of American forest woods. These distributions have been highly appreciated, and are useful in promoting the higher education which is demanded by the times for intelligent agriculture.

This botanical collection has also a special scientific value. It is the custom of all enlightened countries to collect at government centers specimens of the productions of the country, both for practical purposes and for the promotion of scientific knowledge. These museums and herbariums bring together a vast mass of material which men of science investigate and classify, and add to the stock of human knowledge.

Though much of this knowledge may be technical, and useful chiefly to specialists, it is necessary to the full development of those sciences which have so greatly advanced the culture and prosperity of mankind. It is hardly necessary to say that it is the duty of the government to advance the interests of education and science; and assuredly there is no other department of the government where botanical science can be more appropriately fostered and cared for than the Department of Agriculture. Here is the place where information respecting every vegetable production of our vast country should be obtainable. Among the thousands of visitors to the national capital are those who are interested in education and science, who will gladly avail themselves of the opportunity here offered to examine the productions of the entire country and foreign states.

Although much of the botanical material is special and scientific, it should not be forgotten that it is the special knowledge of the botanist which enables him to make those critical determinations respecting species, and respecting the nature, properties, and value of the plants, some of which are supposed to have valuable medicinal properties, some which demand investigation on account of their injurious or poisonous qualities, others for their economic value as fibers, cordage, or food, and still another large series of inquiries respecting the native grasses of different parts of the country and their respective worth for cultivation by the farmer and stock-raiser.

During the last four or five years there have been no botanical col-

lectors on the government surveys, and consequently our most important means of acquiring knowledge of the vegetation of the Western Territories has been cut off. As has been stated, in this department full and complete information should be obtainable respecting the vegetable productions of all parts of our country. As explorations are pushed forward into remote sections, and new portions of our territory are brought under the influence of civilization and cultivation, new plants are discovered, and this division should have the means of keeping fully up with the progress of discovery, if not of itself extending these discoveries.

There are certain portions of our country, notably Oregon and Washington Territories, regarding the vegetation of which this division is very deficient as to information and specimens, and means are very much needed to place a good botanical collector in the field in these regions in order to supply these defects. We have mentioned the distribution of wood and botanical specimens which have been made by this division. There is a large field in this direction in which this division could greatly facilitate the advancement of intelligent agriculture. The young men who are now being educated in our Agricultural Colleges should have some knowledge of the prominent vegetable productions of the different parts of the world, and this knowledge can be best and most easily obtained by inspection and study of the objects themselves as they are presented in the museum and herbarium, and this department should have means at command to aid these institutions in this higher agricultural education. Very few young men in our northern colleges are acquainted with the cotton-plant, rice, or sugar-cane, even as they should be represented in museum specimens.

This department should be made a center of diffusion for these and other objects of agricultural or economic interest.

It is not necessary to go into details respecting our immense forest wealth, in its variety of 400 species of forest trees, nor to a consideration of the wants of a system of forest conservation, but we may say that this subject properly comes within the domain of this department, and that both scientific and practical talent should be employed in its management.

A very creditable beginning has been made in our grounds toward an arboretum, in which should be presented in a living state specimens of all the trees and shrubs of this country which can be grown in this climate. But the enlargement of this arboretum has been suspended for several years on account of a want of means to provide the very small necessary outlay. The wants and interests of the arboretum could be greatly promoted if this division could keep in the field one or more intelligent and capable botanical collectors, who would be able to obtain and send forward specimens of trees, shrubs, seeds, and fruits, so that here at the national capital there might be a full representation of the vegetable productions of our country.

MICROSCOPIST.

In addition to answering the numerous correspondents, both in this country and in Europe, the microscopist has during the past year made a number of original investigations in relation to the best methods of destroying insects and cryptogamic plants which prey on vegetation.

He has also made microscopic examinations for the different divisions of the department. An illustrated paper on the subject of edible mushrooms found growing in great abundance in the United States has been prepared, and will be published the coming year if funds for that purpose can be obtained. A number of microscopic specimens of morbid tissues for photographic illustrations accompanying the report on the diseases of domesticated animals were also prepared by the microscopist.

He has also made investigations relating to the fungus of cotton bolls, measurements of starch granules of sago, causes relating to sweet-potato rot, yellows of the peach, of the fungus known as *Rasotera lacerata*, found growing on the leaves of the Russian apple-trees in the department grounds, &c.

SEED DISTRIBUTION.

Resolutions of granges and other agricultural organizations, letters from all parts of the country, favorable comments of newspaper editors, and last, but not least, the hearty indorsement of very many members of Congress to whom seed distribution had become an onerous burden, leaving them little time to give to their duties as legislators, and proving an endless source of annoyance and loss of popularity, indorse the action of the department in the matter of distribution of seeds according to the law, which directs the Commissioner of Agriculture to distribute seeds to agriculturists.

Through the four thousand regular correspondents and through information obtained from other citizens of the different counties, as well as from the prize lists and reports of county and State fairs, lists of the best farmers, numbering at the present time from ten to twenty in each county, regardless of political faith or anything else but their standing as farmers, have been obtained and entered on our books, and to some of these individuals, as well as to the agricultural societies in those counties, new and valuable seeds adapted to the localities are sent for experimental purposes.

While the limited amount appropriated for the purchase and distribution of seeds will not suffice for distribution to all the farmers on our books during any one year, yet something new will be sent to each county in the United States, and with diligence on the part of the recipient to cultivate and save seed and distribute among neighbors, any new or improved variety of grain or roots can soon be spread over any given county. The advantages arising from the introduction of improved varieties of seed are better understood by considering the effect in the increased production per acre. The area cultivated in wheat in

the United States aggregates in round numbers thirty-five million bushels. An increase of one bushel per acre would give an addition of \$15,000,000 worth of wheat to the crop. This is equivalent to \$150,000,000. Taking the past six years as a basis of calculations, the increase in production per acre averages 1.2 bushels per acre for the last six years, being equivalent to a gain of \$54,220,929 per annum in that time. The number of acres annually in oats in the United States during the last six years averages 11,987,626 acres. The increased production per acre from the introduction of the "Excelsior White Schoenen" oats since was some 2.5 bushels per acre, and a like increase in the production of the "Coard of Trade" oats in the north and the "Rust Proof" in the southern part of the country during the last two years. At the same time the acreage was augmented by one and a half million acres. But the average increased yield per acre attributable in like period to improved varieties of seed would be worth forty million bushels, worth \$15,000,000. Such substantial results speak so eloquently in behalf of proper seed distribution that any further remark would be superfluous.

The following tabular statement exhibits the quantity of seed distributed to each State during the past year, except in the miscellaneous column, in which it was found impracticable to determine the State. It is proper to say, however, that the system of keeping seed accounts has been so changed as to show hereafter the quantity of all the seeds distributed. It will be seen that a marked improvement has been made over former years, the number of packages distributed has been increased by nearly half a million over that of the preceding year.

Tabular statement showing the quantity and kind of seeds issued from the Department of Agriculture, under the general appropriation act, from June 30, 1879, inclusive.

Kind of seeds sent.	Varieties.	Packages.	By request of Senators and members.	Agricultural societies.	Statistical correspondents.	Granges.	Special farmers.	Miscellaneous.
Items.			Papers.	Papers.	Papers.	Papers.	Papers.	Papers.
Vegetable-seed	180	Packages	336,240	27,260	115,205	404,000	241,360	14,000
Flower-seed	33	do	30,774		49			3,000
Tobacco-seed	5	do	10,358				11,918	
Opium poppy	1	do	81					
Tree seed	31	do	460	50				
Herbs	19	do	678					
Borage	1	do	20					
<i>Field seeds.</i>								
Wheat	11	Quarts	5,653	5,792	13,324		25,240	1,000
Oats	5	do	3,085		5,872	60	14,120	
Barley	2	do	1,475	98	428	1,424		
Rye	1	do	258					
Buckwheat	1	do	47					
Field corn	1	do	660					
Potatoes	3	do	1,437	720	3,410	488	4,244	
Artichoke	2	do	1,197	1,022	1,623	3,250	3,821	
Sugar-beet	20	do	76				314	
Sorghum	1	do	2,124				30	
Chickweed-seed	3	do	729				20	
Clover-seed	1	do	105					

Tabular statement showing the quantity and kind of seed issued, &c.—Continued.

Kinds of seeds sent.	Varieties.	Packages.	By request of Senators and members.	Agricultural societies.	Statistical correspondence.	Granges.	Special farmers.	Miscellaneous applicants.	Total amounts.
<i>Field seeds—Continued.</i>			<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	<i>Papers.</i>	
Millet	2	Quarts....	253					1, 155	1, 408
Rice	2	do	110		2, 288		1, 086	486	3, 979
Chufa	1	do	212		1, 078			358	2, 548
Vetches	1	do	6					6	12
Doura	1	do	7					33	40
Tea-seed	1	do	63				200	593	958
Broom-corn	1	do	46		762			158	906
Coffee-seed	1	do						104	104
Beggar's Lice	1	do						2	2
Comfrey	1	Roots.....	20					83	103
Mushroom	1	Baskets...	84					21	105
<i>Textiles.</i>									
Cotton	1	Quarts....	110		1, 372			713	2, 195
Henp	1	do	15		162			18	195
Flax	1	do						31	31
Ramie.....	1	Papers....	2					93	95
Total.....			414, 550	34, 940	146, 530	409, 280	302, 408	238, 030	1, 545, 739

VETERINARY DIVISION—DISEASES OF DOMESTICATED ANIMALS.

Investigation of the diseases of domesticated animals instituted and conducted under the direction of the department has not been entirely confined to diseases of a purely infectious and contagious character, but embraced others of a well-known malignant and fatal nature. While the facts and information elicited are of the most interesting and important character, much yet remains to be positively determined before the work can be regarded as complete. The most valuable point thus far settled is that the disease so long known throughout the entire length and breadth of the country as "hog cholera" is a disease accompanied by few choleraic symptoms, is a purely infectious and contagious malady, and is communicated from one animal to another as all such diseases are, either by inoculation or by contact. This being the case, notwithstanding no remedies have as yet been discovered, the annual losses resulting from the malady among this class of animals will be greatly lessened by the measures taken by farmers and stock-raisers to prevent the communication of the disease from affected to healthy herds. Indeed, the good results of this investigation have already been felt in a marked degree, as the correspondents of the department report a great diminution of the disease during the past summer as compared with previous years.

In most cases this is attributable to better care of the animals, and to such precautionary and preventive measures as have been advised by those who have had charge of this investigation. In no respect has the fatal and destructive character of the disease changed, but it has been less widespread and general than in former years. It is confidently hoped that the experiments now being conducted under the direction of the department, and which are in charge of able veterinary surgeons,

will result in the discovery of either a remedy for this terribly devastating disease, or establish such measures of a sanitary and preventive character as will confine it to very limited localities. The disease has proved more destructive than any malady heretofore known to this or to any other class of domesticated animals in this or any other country. It has prevailed in the United States for nearly a quarter of a century, and while, perhaps, it has not increased in fatality, the losses occasioned through its instrumentality have increased in a like ratio with the increased number of animals produced, until the aggregate now annually reaches many millions of dollars. Careful returns from the correspondents of the department show these losses to be at present from \$15,000,000 to \$20,000,000 annually. It is, therefore, not unusual to receive intelligence from some of the large hog-growing localities in the West that the losses in single counties will reach the large sum of from \$50,000 to \$80,000, and in some instances as high as \$150,000 in one season through the devastating operations of this disease. Neither is it a rare occurrence to be informed of the loss of an entire herd of thrifty and apparently healthy hogs within thirty days after the malady has made its appearance among them. The returns of the Statistical Division of this department show the number of hogs produced last year at upward of 32,000,000 head. This number is greatly in excess of any other class of meat-producing animals reared in this country, and shows the great necessity for the discovery of measures looking to their protection from disease. Millions of dollars are involved in this trade, but it is not alone the heavy losses annually sustained by our farmers that should claim our attention in a consideration of the subject. The fact of the existence of a terribly destructive disease among the swine of this country has already reached many European markets, and our salt and smoked meats have been prohibited entry and sale at ports where the business has heretofore been remunerative. While it has not been shown that the disease known as swine-plague can be communicated to man, at least in a fatal type, yet no diseased animal is fit for food, and it is a notorious fact that many entire herds of swine are slaughtered as soon as the disease is discovered to have made its appearance among them, and their meat placed upon the market for sale and ultimate consumption.

Equally alarming, and, unless effectual measures are at once adopted to stay its further progress, equally disastrous to the material interests of the country must inevitably prove the disease known as pleuro-pneumonia among cattle. In the early history of my management of the affairs of this department I called the attention both of the public and of Congress to the fact of the existence of this dreaded and destructive contagious disease in several of the Eastern seaboard States, and expressed the fear that it might be speedily transported to the great cattle ranges of the West, where, when once located, it would be found impossible to eradicate it. The agitation of the subject was continued until

several of the States where the disease was found prevailing inaugurated measures for its suppression. Their efforts were but partially successful, the failure being attributable alike to the insufficiency of the appropriation made for the purpose and a proper concert of action among the States immediately interested. Upon investigation, the disease was found prevailing, principally among dairy cattle, in the States of Connecticut, Eastern New York, New Jersey, Pennsylvania, Delaware, Maryland, the District of Columbia, and Virginia.

In New York City and vicinity the disease was found to prevail to a most alarming extent, and the legislature of that State at once adopted measures providing for its speedy suppression. A corps of able veterinary surgeons were employed, who commenced their work with an energy that gave promise of a speedy suppression of the disease by the safest and only effectual method, *i. e.*, by the condemnation and immediate slaughter of all animals suffering with or infected by the malady. A large number of animals were condemned and slaughtered, but it was soon found that the appropriation made for this purpose was insufficient, and the work had eventually to be suspended for the want of means to carry it forward.

This was much to be regretted, for, however carefully precautionary measures may be observed, until a further appropriation can be made it will be found almost impossible to confine the disease to the limits it occupied when the work was thus summarily suspended.

Partial efforts for the suppression of the malady were also made by the States of New Jersey and Pennsylvania, and possibly one or two more of the infected States, but these efforts were not prosecuted with that energy and determination that characterized the work inaugurated by the authorities of the State of New York. Where the work of suppressing diseases of this character is undertaken by the States separately and individually many difficulties will be encountered, and some of them will be found almost impossible to surmount or overcome. Unless there is perfect concert of action and entire harmony of purpose on the part of all the States interested, but little good can or will be accomplished in the end. The authorities of New York, by wise and energetic efforts and the expenditure of large sums of money, may extirpate the disease within its own borders, but so long as it is allowed to exist in contiguous States it is liable any day to be carried again over the borders and into the herds from which it has just been eradicated.

GARDEN AND GROUNDS.

The chief object of the garden of this department is the propagation and development of plants that are likely to prove of general utility.

The area devoted to this purpose is entirely inadequate.

The department cannot do justice to itself or the country until experimental grounds here and in different sections of the country are placed

at its disposal. There are many semi-tropical productions of great commercial value, which can now only be treated in a limited way as tender hot-house plants, which they practically are in this latitude, and are consequently placed under conditions not propagation, which not only limit their quantity but deprecate their value.

There is pressing necessity for increased facilities for cultural experiment to test the practicable cultivation of such plants as the olive, tamarind, banana, pineapple, coffee, tea, theobroma or chocolate, orange, especially the bergamot or otto yielding plants, ginger, pepper, cinchona, and many others of commercial value. There are sections of the country whose climate will admit of the propagation of these plants in the open air, in which the cost of production may be put to a practical test. In the absence of means to provide these facilities, the department finds it impossible to fully discharge the primary duties with which it is charged in the act establishing it, viz., "to test by cultivation the value of such seeds and plants as may require such tests, to propagate such as may be worthy of propagation, and to distribute them among agriculturists."

Time and again it has been asserted that coffee was found growing wild in Florida, but an examination of the bush and berries sent the botanist of the department has resulted thus far in disproving the assertion.

I have, however, within the past few days been informed by Ex-Governor Gleason that he himself had seen coffee growing wild on Cape Biscayne, that he had picked the berries, and that a grant of land had been made to a company to induce them to plant coffee on the peninsula.

The reason does not appear why this enterprise was abandoned, but abandoned it was long years since, and the record and memory of the attempt have been almost forgotten.

Accurate botanic information will now soon be obtained, and if coffee is growing on Cape Biscayne the fact will be established.

COFFEE.

Whether there is any part of the United States in which coffee can be cultivated has been a question discussed for years and until recently undecided. A practical solution of this question has at last been reached by Mrs. Julia Atzeroth, of Braiden Town, Manatee County, Florida, who has sent to the department a branch of coffee grown in the open air in her garden. In her letter accompanying the coffee, she says:

Gen. W. G. LE DUC,
Commissioner, Washington, D. C.:

DEAR SIR: Yours of the 20th of last month arrived safe, and I can assure you I felt greatly honored to find that you appreciate my experiment in growing coffee, and that mine should be the only coffee in the United States. I feel sure it can be successfully grown further south where frost never comes, and there is an abundance of

land and soil suited to its growth. My trees are now attracting considerable attention. Many persons have come to see them and ask for seed.

I have given some seed and I will try to encourage its cultivation, to improve the country thereby. That is why I tried it, and now I feel satisfied it will be a success, if fairly tried. I came to this State some thirty years ago, and am one of the first settlers in Manatee. I would like to see you and tell you my experience in Florida. I would not exchange my home for any other State I know of. Florida needs nothing but energy and industry to make its people independent.

The department has supplied Mrs. Atzeroth with a number of young trees with which to enlarge her experiment, and also furnish other persons in the same locality and further south with plants which should, if carefully planted and successfully cultivated, bear coffee within five years.

It is something to know that a lodgment has been effected on the coast of Florida, and though four trees, so far, are known to have been successfully grown and fruited, yet whether the coffee will ripen thoroughly and prove as profitable here as it has in other countries is yet to be determined.

TEA.

The efforts of the department to introduce the culture and manufacture of tea have been steadily continued and with a fair prospect of ultimate success. Of the 69,000 plants distributed last year, the reports indicate a loss of about one-half, owing to carelessness and failure to protect them from the hot summer sun; but the applications of the farmers are numerous and the distributions of the department during the fall of 1879 and spring of 1880 will be continued.

The kaki, Spanish chestnuts, English walnuts, olives, camphor-trees, and other plants and vines distributed the past year are uniformly reported upon as thriving and doing well.

There have been distributed from the garden during the past year, 28,000 strawberry-plants, 9,748 grape-vines, 69,154 tea-plants, 13,921 plants of orange, olive, fig, and semi-tropical fruits and plants of various kinds, 5,000 plants of Japan persimmons, 70,000 scions of Russian apples.

A letter from an intelligent correspondent, Mr. Weaver, of Bogota, South America, whose opportunities of observation have been ample, and whose opinions upon the cultivation of coffee and cinchona are entitled to considerate attention, is produced in the appendix for the encouragement of those who are inclined to help the department to make this interesting experiment.

The clerks and working force of the department, under the able direction of the chief clerk, have accomplished an unusual amount of valuable labor; but if the force of the department were doubled every year for the next five years it could be employed with great profit to the country.

The following table exhibits in a condensed form the appropriations

made by Congress for this department, the disbursements expended balance for the fiscal year ending June 30, 1879:

	Amount appropriated.	Amount disbursed.
Salaries	\$88,900	\$88,900 00
Collecting statistics	10,000	10,000 00
Purchase and distribution of seeds	75,000	75,000 00
Experimental garden	7,000	7,000 00
Museum and herbarium	1,000	1,000 00
Furniture, cases, and repairs	4,000	4,000 00
Library	1,000	1,000 00
Laboratory	1,500	1,500 00
Contingent expenses	8,000	8,000 00
Postage	4,000	4,000 00
Improvement of grounds	6,500	6,500 00
Printing and binding	11,000	6,073 50
Investigating the habits of insects, &c	10,000	10,000 00
Investigating the diseases of swine, &c	10,000	10,000 00
Erection of stable	1,500	1,500 00

For the purpose of comparison, the amounts appropriated to various departments of the general government for the fiscal year ending June 30, 1879, is herewith appended.

Object of appropriation.	Amount.
Congress	
Executive proper	
State Department	
Treasury Department	10,000 00
War Department	10,000 00
Navy Department	10,000 00
Interior Department	10,000 00
Post-Office Department	10,000 00
Department of Justice	10,000 00
Department of Agriculture	10,000 00
Total	\$300,000 00

IMMEDIATE NECESSITIES OF THE DEPARTMENT.

The immediate necessities of this department, beyond the appropriations usually made for its ordinary working, may be stated:

1. A laboratory of proper size and fully equipped, to cost not less than \$300,000, with a sufficient appropriation to meet the expense of an additional force that will be necessary to carry forward investigations on a larger scale than the present laboratory and appliances warrant, and the further sum of \$5,000, made available immediately for the labor and material necessary in the pressing work of this division.
2. An experimental farm of 1,000 acres of ground, in the neighborhood of this city, and five experimental stations in different parts of the country, viz., one in California, one in the interior of the United States (to be devoted to the introduction and preservation of the breeds of domesticated animals and to the domestication of some of the wild animals of the country, among them the Buffalo), one in

in Florida, and one in New York above the latitude of Albany. To inaugurate these farms a large sum will not be necessary, and after the first year the expense will be more than paid by the results of the cultivation at each station.

3. An increased appropriation for the gardens and grounds of the department, which embraces experimental cultivation and propagation of trees, plants, &c., for distribution. This appropriation should be increased to at least \$15,000.

4. An increased appropriation of \$5,000 for obtaining new material, employing labor, and otherwise extending the benefits arising from the museum and botanical divisions of this department.

5. A renewal of the appropriation of \$10,000 for the examination of the diseases of domesticated animals.

6. A renewal of the appropriation for continuing the investigation of the history and habits of insects injurious to agriculture. Ten thousand dollars at least should be annually expended in that direction by the department.

7. An additional appropriation of \$6,000 to continue the work on forestry.

Permission and direction to occupy and plant on the government land on the Coteau d'Prairie, a forest conforming to the width of the coteau and extending the entire length of the elevated land from the northern end near Bigstone Lake toward the Iowa line.

A re-establishment of the forest which once grew on this elevated land would increase the value of the government land far beyond the cost of planting, and can and would also afford an opportunity of ascertaining the meteorological and other beneficial changes that would probably take place in consequence of the establishment of so large a body of timber crossing the path of the severe storms that sometimes sweep with terrible energy and devastation across those naked plains. The lands are owned by the government, and they can be reserved from sale for this purpose. The experiment need not be an expensive one, nor can there be any doubt about the favorable result even as a profitable investment.

The same thing should be done in the middle plains, commencing at the South Park and running southeast. With these two experimental forests many questions now discussed could be settled, and much knowledge of a most interesting and valuable character could be furnished to the people.

A tract of country at the foot-hills, on the east and west side of the Rocky Mountains, usually considered an arid desert, and estimated to be equal to nearly one-fifth of the productive area of the United States, when irrigated, has been found to be astonishingly productive, especially for all the cereals that are commonly used for the support of human life.

The inadequacy of the streams which run from the mountains into these plains and irrigate the country, the excess of the population of

the mines which demands more food than can be raised upon the lands that are irrigated from these streams, and the general welfare of that section requires that the government should take some active interest in ascertaining whether by artesian wells in different locations large areas of the country may not be profitably watered and made productive. The experiments recently made by the French engineers in the great deserts of Africa are well worthy of imitation in this country wherever it would seem practicable. As preliminary to more extended operations, an appropriation of \$50,000 to be immediately available should be made to examine with the drill the practicability of irrigation from artesian wells.

A building for the exhibition of working models of agricultural machinery is a want long felt, and which would be of the highest interest and instruction to all persons visiting Washington from all parts of the United States and from foreign countries. Such a collection could be made, if the building was furnished by the government, with very little expense. Nearly every manufacturer of agricultural machinery would be glad to contribute a specimen of the tools or implements manufactured. This building should occupy the southwest corner of the grounds, and should be of sufficient extent to provide for some years in the future, and should form part of the permanent building which the department will necessarily require.

In every county in the United States in which agricultural industries are pursued, this department has or aims to have a principal correspondent and four assistants. These should all be furnished with sets of instruments for taking the temperature of the air, the soil, the pressure of the atmosphere, and the degree of moisture present in the atmosphere. As the work of these correspondents is given gratuitously, the government ought to supply the instruments necessary for making the observations, and an appropriation for this purpose, and for furnishing record-books and other stationery, should be made.

Very respectfully, your obedient servant,

WM. G. LE DUC,
Commissioner of Agriculture.

The PRESIDENT.

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